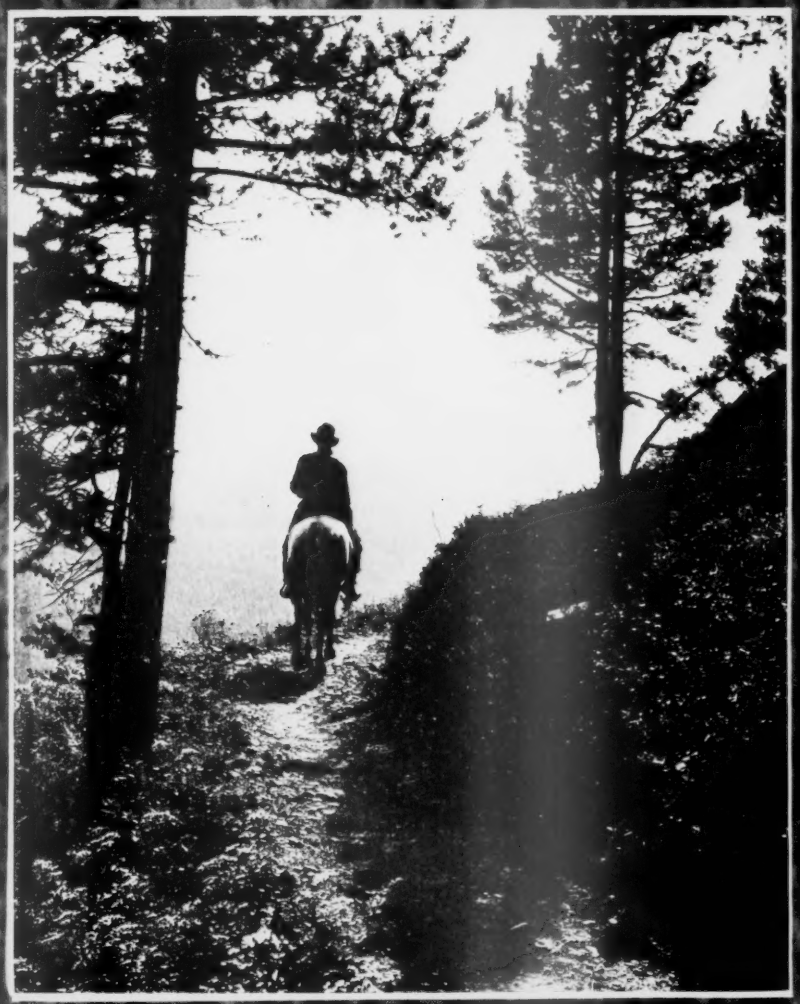
American Forests and Forest Life



July, 1927

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ADEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in cooperation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production or the protection of stream-flow; more extensive PLANTING OF TREES by individuals, companies, municipalities, states and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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AMERICAN FORESTS AND FOREST LIFE

The Magazine of The American Forestry Association

Ovid M. Butler, Editor, L. M. Cromelin *and* Erle Kauffman, Assistant Editors

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Photograph by Fred H. Kiser, used by courtesy of the National Park Service.

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AMERICAN FORESTS AND FOREST LIFE invites contributions in the form of popular articles, stories and photographs dealing with trees, forests, reforestation, lumbering, wild life, hunting and fishing, exploration or any of the many other activities which forests and trees typify. Its pages are open to a free discussion of forest questions which in the judgment of the editor will be of value in promoting public knowledge of our forests and their use. Signed articles published in the magazine do not necessarily reflect the views of the Association. Manuscripts must be accompanied by return postage. Editorial and Publication Office, The Lenox Building, 1523 L Street, Washington, D. C.

I Know A Wood

I know a wood where shadows lie so deep
It seems no ray of sunlight e'er could peep
Through foliage so dense that noontide's glare
Is tempered like dim, hallowed aisles of pray'r.

A pageant of the shyest wild flowers known,
Unheralded, its fair show holds alone,
From spring to autumn, each succeeding year,
As long as stands, untouched, the forest here.

Yellow wood violets, waxen leaves outspread,
Lift tiny faces from their mossy bed;
And 'neath the pines, arbutus, star-white, shows,
Where recently have melted winter's snows.

Clintonia's golden bells are swung about,
The wild hydrangea's banners white flung out;
Jack-in-the-pulpit is prepared to preach,
And Nature's radio broadcasts every speech.

But where the wooded hill slopes to a bog
Crossed over by a massive, prostrate log,
July holds out to us the fairest treat,
Purple-fringed orchids breathing perfume sweet.

I know a wood—but ah! no space nor pen
Avails to tell its dear delights again.
But miles nor years, howe'er they intervene,
From memory shall erase that fairest scene.

—*Jennie E. Hussey*

AMERICAN FORESTS

VOL. 33 JULY, 1927 No. 403

Do Forests Prevent Floods?

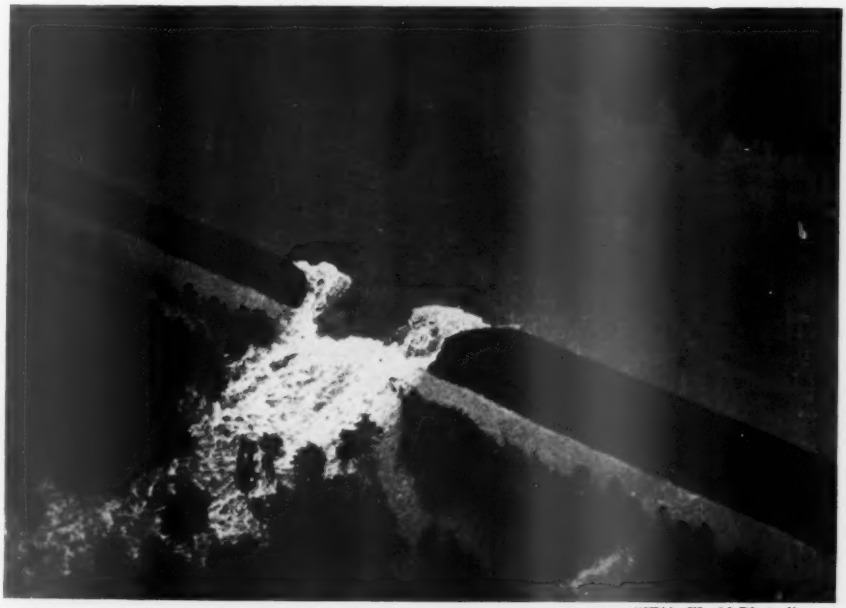
By RAPHAEL ZON

Director, Lake States Forest Experiment Station

Much has been written, both pro and con, about forest destruction as one of the chief causes of floods. In the wake of the Mississippi Valley tragedy prolific journalists have presented any number of theories; engineers, foresters and geologists have contributed their views; to present an unbiased and dispassionate analysis of facts the editor has called upon one of the foremost authorities on the subject in the country, Raphael Zon, Director of the Lake States Forest Experiment Station at St. Paul, Minnesota.

ONE often hears mentioned forest destruction as one of the chief causes of floods. The flood in the Mississippi Valley is one of the great disasters in our history. At such a time there must be no room for professional partisanship, and the people have a right to demand, from the forester and engineer alike, a frank and dispassionate analysis of the facts. What, then, are the facts?

Floods, such as the country is now experiencing, take place when there are excessively heavy or long-continued rains or rapid melting of snow, or both, over a large part of the river valley. Soils covered with forests can store up a quantity of water corresponding to a precipitation of 0.16 inch, or, in very favorable conditions, 0.24 inch at most. A cover of moss can store up from 0.18 to 0.39 inch of water. Moss can absorb water amounting to from 200 to 900 times its weight; dead leaves of birch, maple or other hardwoods 150 to 220 times their weight, and pine needles from 120 to 135 times. These amounts are insignificant when compared to the enormous quantities of precipitation that cause excessive floods. Over 22 inches of rain fell in 24 consecutive hours at some points in the storm of July, 1916, in the Blue Ridge of North Carolina that inundated the French Broad, Catawba and other river basins and caused destruction estimated in the millions of dollars. A torrential rainfall of 14 inches within a short period was recorded this spring in the lower Mississippi Valley. Such enormous quantities of water are utterly beyond the capacity of the forest floor to absorb. Very soon after a heavy rainfall and often during the precipitation which may precede it, the forest floor becomes so completely saturated with water that it allows any further rain to pass off, just



"Wide World Photos"

AN AIR VIEW OF THE TEAL CABIN CREVASSE, NORTH OF VICKSBURG. ON THE EAST BANK OF THE MISSISSIPPI, TWO HOURS AFTER THE BREAK OCCURRED. THE FORESTS THEMSELVES COULD NOT HAVE HELD BACK THESE RAGING WATERS, SAYS MR. ZON, BUT WITHOUT FOREST MANAGEMENT THERE CAN BE NO RATIONAL RIVER MANAGEMENT. THE ENGINEER AND THE FORESTER MUST WORK HAND IN HAND

as it would from open ground. It is evident that under exceptional meteorological conditions, the capacity of the forest floor to store water must fail.

Such exceptional meteorological conditions existed over a large portion of the Mississippi watershed during last fall and this spring. After a wet fall, which saturated the ground, there came in the northern portions a very heavy winter snowfall. The melting of the snow in the spring, over ground already saturated with water in the northern parts of the watershed, combined with heavy rains, at times torrential in character, in the middle and lower parts of the Mississippi Valley, caused the present terrible floods. Under such conditions if the entire Mississippi watershed were densely covered with forests, flood conditions could not have been prevented. Whether they would be as excessive and disastrous in their consequences is another question.

Griffin Studios

IS IT NECESSARY FOR THIS COUNTRY PERIODICALLY TO EXPERIENCE SUCH CALAMITIES AS THIS IN ORDER TO LEARN THE SIMPLE LESSON THAT WATER LIKE FIRE MUST BE CONTROLLED AT THE START? THE SCENE ABOVE, AT COLUMBIA, LOUISIANA, IS TYPICAL OF CONDITIONS EXISTING OVER HUNDREDS THROUGHOUT THE 16,000 SQUARE MILES FLOODED BY THE MISSISSIPPI RIVER

That high floods occurred on the Mississippi River long before logging operations on a large scale began in the northern States is a matter of record. The fact that forests do not prevent floods resulting from exceptional meteorological conditions, is not saying, by any means, that forests have no effect upon water stages in our rivers, or that they are an insignificant factor that can be overlooked in any comprehensive plan for flood control by either storage reservoirs, levees or any other engineering works.

It is a hopeless task to connect up statistically the disappearance of our forests in the northern States, with the frequency and severity of floods in the Mississippi River basin. Flood statistics are extremely meager in this country. If there are records of the dates when they occurred, no other accurate records existed at that time of the condition of the cover in the basins.

In this country there are about 287 rivers which are classed as navigable. Of these scarcely 25 per cent have any kind of coextensive records of precipitation and stream measurements covering periods of more than 15 years, let alone records of the vegetative cover.

Deductions made from deficient data secured in limited regions have often been generalized as applying to all rivers, climates and conditions. In order to bring out the true relation between forest cover and stream flow, the conditions must be studied separately for each stream. The effect of forest on stream flow is different in different climates. It varies with the abundance, character and distribution of the precipitation, and with temperature. In regions with severe weather, abundant snowfall and sudden springs, all other conditions being equal, the effect is greater than in humid climates with prolonged drizzling rains. On steep, impermeable soils, the effect of the forest is greatest. On deep sandy soils, it may be insignificant.

Most of the studies of stream flow so far made have been confined to large river basins of many thousand square miles. On such there exist many conditions of

soil, topography and vegetative cover, which counteract each other and obscure the relation that may exist between the behavior of the stream and forest vegetation.

It is futile to draw conclusions as to the effect of forests upon flood stages by observations on the lower portions of large rivers. Yet that is exactly what has been done in most cases. These are misleading, since the water stages at the lower portions of these rivers are the result of the diverse conditions prevailing on the various tributaries.

Any attempt to base conclusions about the effect of forests upon floods upon inexact observations of stream flow leads only to groundless speculation, lengthy arguments and confusion. A striking example of this is given by the Tiber, which, with the exception of the Nile, perhaps, is the most historic of rivers. It has so far proved impossible to ascertain whether the floods of the Tiber have increased or diminished in the course of centuries, owing to the fact that the incomplete records lend themselves to conflicting conclusions.

When we turn, however, from large to small watersheds, the forest as a controlling factor in stream behavior comes out in unmistakable bold relief. If forests cannot prevent great floods in large river basins, they can and do prevent small floods in small watersheds. Accurate records, continued for a long period of years, of the effect of forested and deforested watersheds upon the behavior of streams are available for many countries, including the United States. They are particularly abundant in Switzerland, and the French, Italian and Tyrol Alps. This effect has now been so universally recognized that such countries as Switzerland and France have adopted as a definite policy, involving large expenditures of money, the control of mountain streams by means of reforestation. It has become a recognized principle in the older countries that in order to bring a river system under permanent control, the work must start, not at the mouth but at its source, and be confined chiefly to the reestablishment of a forest cover at the headwaters of the stream.

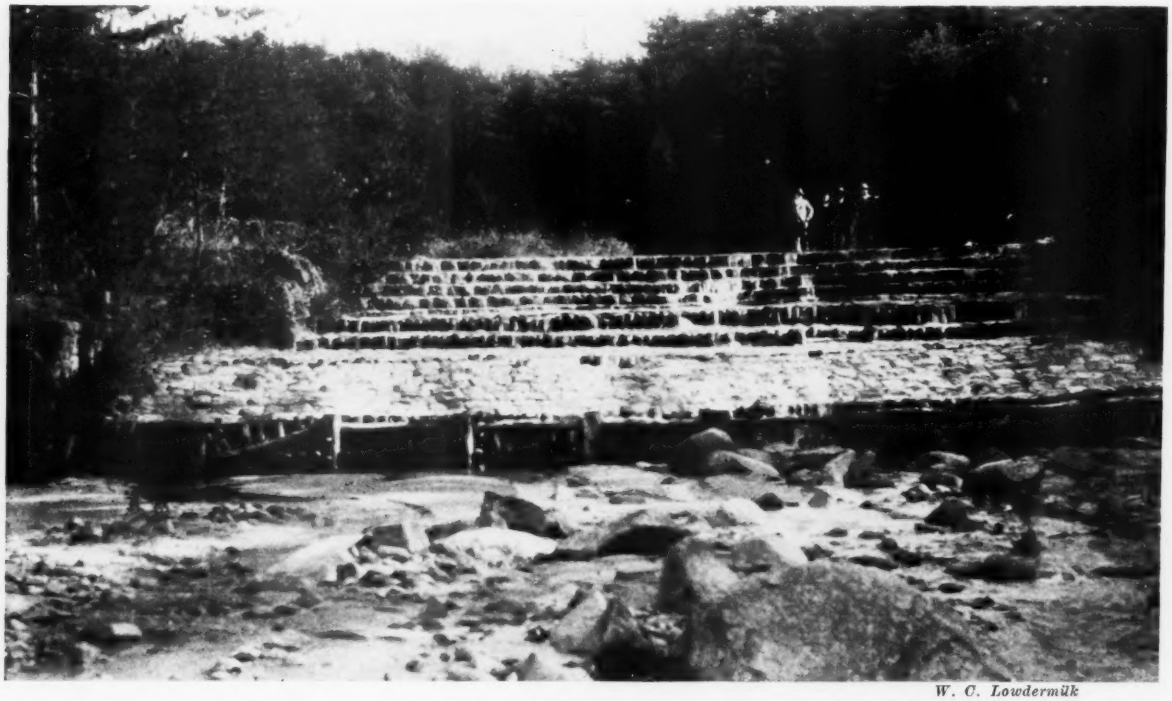
It is not so much the storage of water in the forest floor that gives forests such a prominent part in the regulation of stream flow as their ability to prevent erosion. The forest is the most effective agent for protecting the soil from erosion, because (1) the resistance of the soil to erosive action is increased by the roots of the trees which hold the soil firmly in place, and (2) at the same time the erosive force of the run-off is itself reduced because the rate of its flow is checked and its distribution over the surface equalized.

IT HAS LONG BEEN RECOGNIZED IN THE OLDER COUNTRIES THAT THE SECRET OF PERMANENT FLOOD CONTROL LIES AT THE SOURCE RATHER THAN THE MOUTH OF MOUNTAIN STREAMS. THE ABOVE PHOTOGRAPH SHOWS AFFORESTATION COMBINED WITH ENGINEERING WORK IN THE UPPER BASIN OF THE SORNELL RIVER IN THE NORTHERN ALPS, TO CONTROL FLOODS IN THE LOWER COURSES OF THE RIVER

Erosion has a most important bearing upon the height of flood waters in the rivers, since the sediment carried by the rivers and the coarser detritus brought down by smaller streams often increase stream volume to such an extent that the height of the water is raised far beyond the point it would reach if it came free from the detritus and sediment. When the channel of the stream has become filled with waste material—even a slight rainfall will cause a flood, while, if the channel were deep, it would have no perceptible influence upon the height of the water in the stream. Streams flowing from deforested watersheds are capable of carrying enormous quantities of detritus. The famous French engineer, Demontzey, computed that one mountain torrent brought down, after one storm, in 85,000 cubic yards of water over 221,000 cubic yards of detritus, or more than 2½ times its own volume.

L. C. Glenn, who made a special study of the erosion

in the southern Appalachian region, ascribes the increase in the height and violence of floods in the mountain streams of the southern Appalachians to the denundation of the steep mountain slopes and the consequent erosion. When floods are small and gentle, the deposits in the plains consist of fine alluvium. When the floods are great and violent, the deposits consist of coarse sand, cobbles and boulders. In the past the flood-plain deposits of such southern rivers as the Watauga, the Doe, the French Broad, the Catawba and the Yadkin were built of fine sandy loamy clay. In the last two decades, however, the deposits have grown coarser, which points to the prevalence of high and violent floods.



W. C. Lowdermilk

JAPAN TOO RECOGNIZES THAT FORESTS AT THE HEADWATERS OF STREAMS ARE ESSENTIAL TO FLOOD CONTROL. THIS VIEW OF A PROTECTED WATERSHED IN THE SHIGA PREFECTURE OF JAPAN ILLUSTRATES THAT COUNTRY'S USE OF DAMS AND FOREST COVER TO CHECK FLOODS AND EROSION

The increasing amount of sediment carried by our streams is one of the chief factors contributing to the increasing flood danger. Since of all vegetable covers, forests are most efficient in preventing the slopes from eroding and the beds of streams from filling with silt, they are an important factor in flood control.

In the light of all these facts, one cannot escape the conviction that the cutting away and burning of the forest on the western slopes of the Appalachians, where the Ohio and its tributaries rise, increased erosion from the slopes, raised the water level in the tributaries and increased the flood danger farther down the Mississippi. Likewise, breaking up the virgin sod of the plains, cutting away the timber along the banks of the streams in the West, draining the swamps and even some of the lakes of the North, the construction of a network of ditches and sewers following in the wake of settlement and city development, all have thrown a greatly increased flood burden on the lower portions of the Mississippi Valley. The more serious part of it is that erosion, once started, has a tendency to grow worse. If soil erosion, either from denuded forest slopes or cultivated fields is not stopped, there is little likelihood that floods will ever be controlled. As H. H. Bennett, of the United States Bureau of Soils, states: "There are no hillside terraces north of the Arkansas River. Eighteen inches of top soil have been removed from the youthful fields in some parts of northeastern Kansas. The entire top soil is gone from hundreds of thousands of acres in western Virginia, western Pennsylvania, eastern Kentucky and southeastern Ohio. From these lands rain water courses much faster to the Mississippi than formerly.

"Trees, grass, woodlots, forests and other soil-binding and soil-building crops will vastly improve the flood situation. Not only will they slow up the run-off water, but they will save the most valuable part of the soil and will reduce the clogging of streams, which cuts down their carrying capacity and adds to the flood danger."

The forest vegetation on the steeper slopes of the watersheds could not prevent flood conditions resulting from exceptional sudden accumulations of water on the watershed. Their destruction, however, vastly aggravated the flood danger and made them many times worse

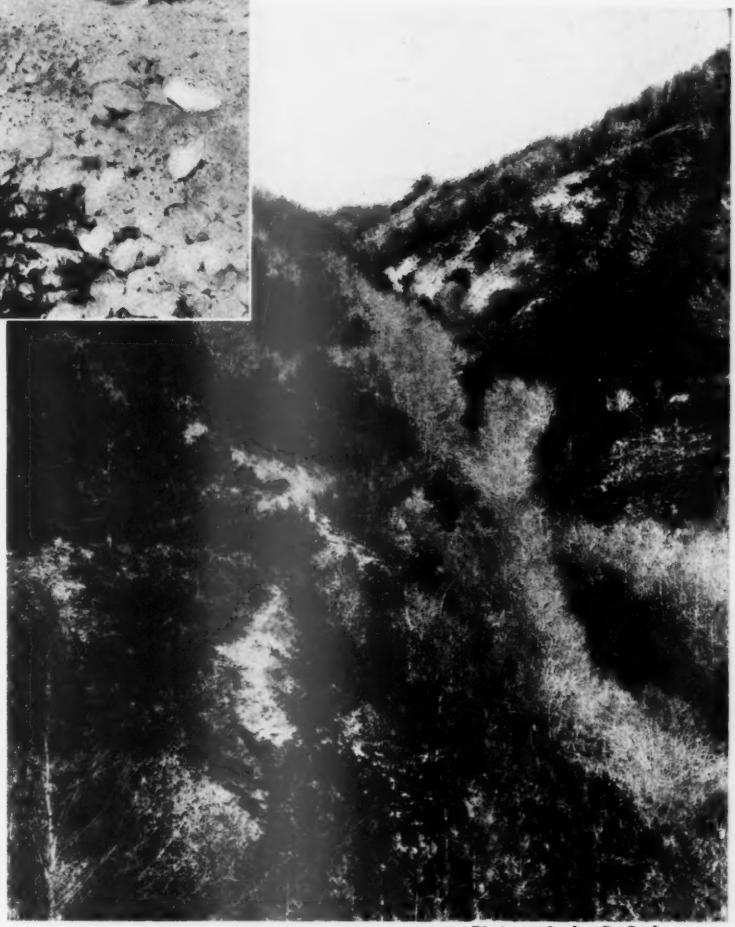
FRANCE, AS WELL AS A NUMBER OF THE OLDER COUNTRIES, HAS ADOPTED AS A DEFINITE POLICY THE CONTROL OF MOUNTAIN STREAMS BY REFORESTATION AND HAS SPENT VAST SUMS IN ENGINEERING AND FOREST WORK AT THE HEADWATERS OF HER MOUNTAIN RIVERS

than if the slopes were covered with forest and soil wastage from cultivated fields were prevented.

While it is true that forests by themselves could not prevent floods in large rivers in times of exceptional meteorological conditions, it is similarly true that *without the forest* no engineering works on the middle or lower courses of the river can afford permanent and effective protection against floods.

Different opinions are being expressed by experts of high standing in their respective fields as to the best means of controlling floods. Some believe that the solution lies exclusively in the building of levees,—straightening, deepening and widening of channels in the lower portions of the Mississippi. Some put their trust in spillways and in building large storage reservoirs, as exemplified by the storage dams built on the Miami River after the disastrous Dayton flood. There is also no lack of forest enthusiasts who claim that floods can be entirely prevented by maintaining a forest cover at the head waters. While there is merit in each of these methods no one of them by itself solves the problem, and all three, and possibly some others, must be taken into account in any comprehensive plan for flood control.

Of the advocates of the different methods of flood control on the Mississippi, only those who adhere to the policy of "levees only," by which the current of the river is confined to the channel between the earth dikes have so far been



Photographs by G. Garbe

THE PHOTOGRAPHS HERE SHOWN ILLUSTRATE THE REESTABLISHMENT OF THE FOREST COVER ON A TORRENTIAL STREAM IN THE FRENCH ALPS. THE TWO PICTURES, OF THE SAME AREA, SHOW STRIKINGLY THE CHANGED CONDITION OF THE WATERSHED AFTER TWENTY YEARS' GROWTH

given opportunity to demonstrate the efficacy of their methods. This policy has now been tried out for nearly 50 years, and the Federal Government alone spent some $168,000,000 for that project since 1879. If the spring floods of this year on the Mississippi prove anything, they prove that "levees only" are not effective.

It is not necessary for a man to have engineering training to see what will happen and is happening by this method of flood control alone. Given a river flowing through a flat alluvial plain, depositing sediment at its own bottom as it goes, and constantly filling up its bed, the building of levees along its banks under such conditions is courting disaster. The average level of the river will rise between the levees, and the bottom will rise as further sediment is deposited. Therefore, soon the levees will have to be built higher. The net result of the process is only to lift the whole river bodily above the plain. This is shown clearly by the Yellow River in China. There are points where "China's Sorrow" has now been lifted 60 feet above the plain. In this process the danger grows by geometrical progression. The higher the river is lifted, the greater the head of water in respect to the surrounding region, and the greater the area of flood when the river breaks through. Ultimately, of course, the process has to stop. Some engineers claim that the Mississippi bottom is rising. Others deny it. Whether the bottom itself has risen or not, the average level of the river is now higher in some places, as much as 5 to 10 feet, above the city of New Orleans. In time it may become, if the levees are built higher and higher, an *aerial* waterway.

In following the policy of "levees only," our engineers follow the easiest way in the Mississippi Valley, but they fail to face the real problem and have only added to the future task. In actual dollars and cents, many times more wealth has probably been spent in vain attempts at temporary control than a permanent engineering plan, established at the beginning, would have entailed.

FOREST AREAS, ACCORDING TO MR. ZON, IN NEED OF PROTECTION FOR THE PROPER REGULATION OF THE MISSISSIPPI RIVER. THE AREAS ROUGHLY INDICATED EMBRACE APPROXIMATELY 89,000,000 ACRES, OF WHICH 49,000,000 ACRES (BLACK) SHOULD HAVE AT LEAST 70 PER CENT OF THEIR AREA IN FOREST. FROM 40 TO 70 PER CENT OF THE REMAINING 23,000,000 ACRES (SHADED) SHOULD BE KEPT FORESTED

The levees method, as Lyman E. Cooley, an engineer of many years' experience, testified once before the Committee on Flood Control, is a brute force method. Levees may control, but they also create a danger. "By building levees all along the banks," said Cooley, "you wipe out all the natural overflow and constrain the entire volume to river channel and take it as it comes. You have stimulated the energy, filed the teeth and ground the claws of your tiger." The advocates of the "levees only" system frankly admit that their remedy is only a palliative, and not a permanent remedy.

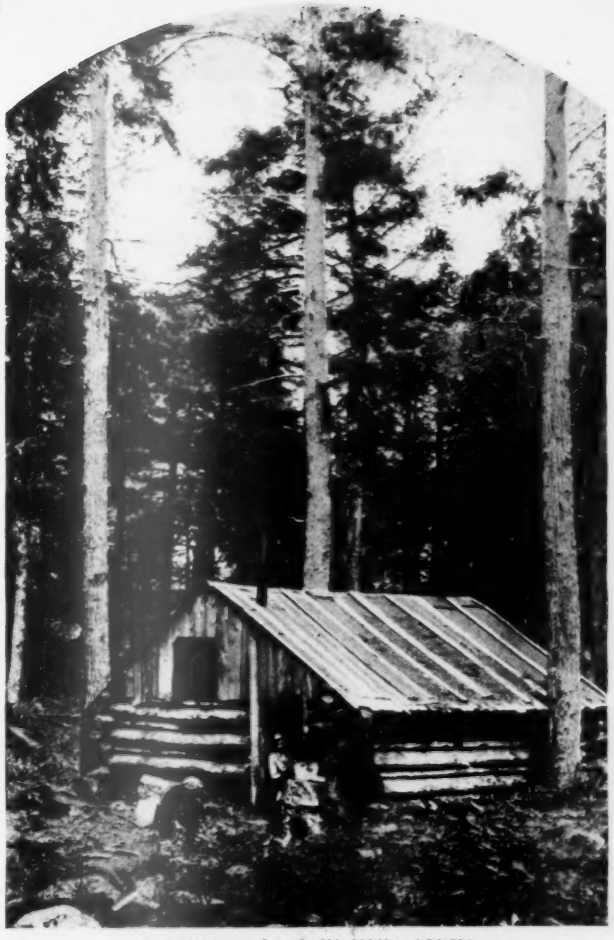
It would be folly, however, to abandon the levee system. Under the levee system, which has been formally in operation for about 50 years but, in fact, much

(*Continued on page* 432)

Adventure Lands of Eastern Canada

By F. C. C. Lynch

Director, Natural Resources Intelligence Service, Canada



A HUNTING CAMP IN NOVA SCOTIA

Here, in vast forested areas are found moose, deer, bear and other fur-bearers, and the hunter has an unexcelled opportunity to test his skill.

ADVENTURE, as the very antithesis of the organized and personally conducted outing, may be fully realized by those who are desirous of exploring with the aid of canoe the almost countless rivers, lakes and streams in Canada, many of which will enable the explorer to set foot upon territory seldom, if ever, trodden by mankind. It is here in the great seclusion of both turbulent and placid waters and midst the dense virgin forests that the handicraft of Nature, seen at its best, helps man to forget the jostling crowds of busy city streets.

Picture, if you can, a country extending from the Atlantic to the Pacific Ocean and from the international boundary line to the Polar regions, including over three and a half million square miles of exceedingly fertile lands, gigantic mountain ranges, inland waterways that represent approximately half the world's fresh water areas, virgin forests, scenic rivers and lakes, and you have, to some extent, visualized the unlimited possibilities afforded the pleasure-seeker in Canada to explore new fields which meet practically every possible demand of outdoor life.

Vast forested areas of virgin pine, spruce and other native trees through which run the turbulent waters of mighty rivers, afford the canoeist a real test of skill, the ardent huntsman an opportunity to procure the finest specimens of moose in the world and the "Disciple of Isaak Walton" a chance to obtain, during the fishing season, his full quota of the finny tribe.

Within a few hours after leaving any city in the eastern United States, one can reach the starting point for a canoe trip through the wide expanse of scenic rivers and lakes of northern Ontario and Quebec to Hudson and James bay. To anyone with a hunger for adventure, a love of outdoor life and a yearning for the unknown and uncharted places, the canoe trip through northern Quebec from Lake St. John to Lake Mistassini and continuing on to Rupert House on James Bay will provide a never-ending source of satisfaction.

There are, of course, many ardent canoeists who shun the more hazardous journeys to remote places. For those who do not desire such lengthy and strenuous trips there is ample opportunity to cruise through countless chains of connecting lakes and streams, all within easy reach of hotel or facilities for obtaining supplies.

To journey leisurely through the beautiful Rideau lakes, Algonquin Park or the famous Muskoka district, is a delightful experience. Whether the canoeist desires the extended trip through the northern solitudes or whether he prefers always to be within easy access to settled areas, becomes simply a matter of selection. In any case, beautiful trees of hemlock, spruce, pine and other species are one's constant companions.

A canoe trip through Canadian waters affords an excellent opportunity for the enthusiastic angler. A check list of no fewer than 569 distinct species has been compiled of the fishes caught in Canada. Hence,

the Dominion is able to offer to the fisherman a great diversity of game fish in both inland and sea waters. Of the many varieties of game fish eagerly sought after, perhaps the most popular are salmon, trout, bass and maskinonge. The clear, cold lakes of Ontario and Quebec are the favorite waters of the small-mouth black bass and maskinonge as well as other varieties, including pickerel, pike and lake trout.

THE "HERMIT FALLS"

A beauty spot in this scenic land, where the sportsman may revel in his own particular game, and the explorer find almost limitless opportunity for adventure.

To furnish detailed information concerning all available waters would require volumes, although no article treating the subject of game fish in eastern Canada is complete without mention of the famous Nipigon waters flowing from the lake itself through the beautiful Nipigon River to Lake Superior. So famous, indeed, are the fighting trout of Nipigon that "trout" and "Nipigon" have become almost synonymous. In these well-known waters for many years past have been vested the honors of producing the largest brook trout in the world.

A DELIGHTFULLY LOCATED SUMMER CABIN ON CACHE LAKE, IN ONTARIO

It was in the summer of 1915 that the world's record speckled trout was taken from the waters of the Nipigon by Dr. J. W. Cook of Fort William, Ontario. Weighing fourteen and one-half pounds, it measured thirty-one and one-half inches from head to tail and eleven and one-half inches across. This beautiful specimen was caught with rod and line baited with a live minnow.

Another instance of a splendid catch of lake trout comes from the Georgian Bay district. It was here that Capt. Donald S. McInnis, while fishing with troll off the tug "Gracie," caught six magnificent lake trout, the largest weighing thirty-five pounds, the next twenty-four pounds, and the other four averaged twelve and one-half pounds. Devotees of rod and reel are becoming more numerous each year, eager for the thrill that attends the capture of the swordfish and leaping tuna. These monsters of the deep are taken with the aid of rod and line, and much has been said by Zane Grey and other authorities concerning this exciting sport off the southeast coast of Nova Scotia. Then, again, there are many districts throughout Ontario and Quebec where large "muskies" provide thrilling sport.

For the anglers who want action and thrills casting for salmon and trout and the satisfaction of being able to wet their lines with the assurance that they will be amply rewarded, there is no place in eastern Canada that will afford them such opportunities as the famous waters of New Brunswick, Nova Scotia and Prince Edward Island. All along the various rivers are found swift running rapids and deep pools, where both salmon and trout of astounding size may be taken.

Not alone does eastern Canada, by the immensity of her extensive waterways, stand in the forefront as an angler's paradise; her forest area, representing hundreds of thousands of acres, provides a natural breeding ground for the moose, monarch of the forest; the timid, red-tail deer and the caribou. It is true that these are found in other parts of the North American continent, but Canada represents their most natural range, and under Canadian conditions their highest development is reached.

The inclination of the average sportsman is to look for new and attractive hunting areas. Accessibility is, however, one of the first considerations. The degree of accessibility to the best game areas throughout eastern Canada surprises distant visitors, for here this wonderland of sport may be reached by commodious trains and by auto over well-constructed motor highways. Improved motor roads, of which there are a network, are suitable for general motor traffic, and in consequence the sportsman encounters the least difficulty in reaching the goal of his desires without undue expense or unnecessary loss of time.

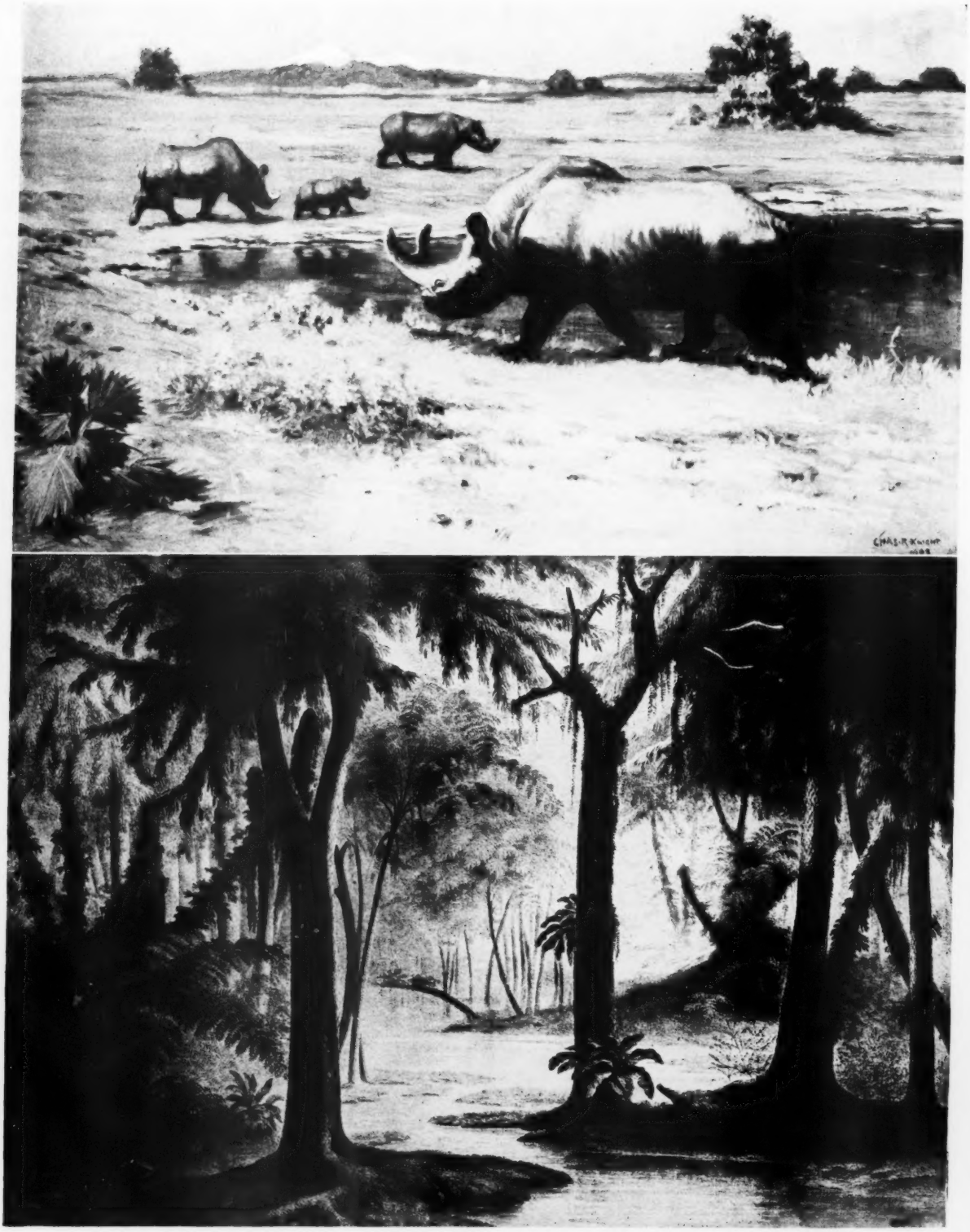
If it be the huntsman's desire to reach the famous Gaspe peninsula district in the province of Quebec in quest of caribou, he may do so either by rail or motor car. While sportsmen visiting this particular district should bring their own guns and ammunition, all other necessary supplies can be procured at moderate cost at Gaspe. The same may in all fairness be said of many of the more remote areas throughout northern Ontario and central and northern Quebec. Guides are available throughout all districts.

In the extreme eastern limits of eastern Canada, that portion known as the Maritime Provinces or Provinces by the Sea, there are immense forested areas, which provide a natural breeding ground for the moose, deer, bear and many species of smaller fur-bearing animals. Both moose and deer, despite the great inroads of hunters each year, are maintaining their numbers in this territory, and there are some disinterested authorities who claim a material increase. As every true sportsman knows, the moose is generally conceded to be the finest game animal in America, and nowhere can better specimens be found than in Nova Scotia and New Brunswick.

Huntsmen, anglers and those in search of health, rest and contentment coming to eastern Canada may do so with assurance that their desires will be realized. No other corner of the American continent has more to offer in the way of sport and opportunities for health-giving recreation in regions far removed from the usual haunts of man.

FISHING IN THE QUIET WATERS OF WHITE SANDS LAKE

Here is found the charm of placid water, in the heart of a dense virgin forest region, where one may cast aside his cares and truly "the world forgetting" be "by the world forgot."



A THROW-BACK TO PREHISTORIC TIMES,—THE BLACK HILLS REGION BEFORE THE ERA OF MAN

A family of Titanotheres on the Oligocene flood plains. In the early days of the world, a glance at the flooded plains of the present Black Hills region would undoubtedly have revealed such a picture as has been painted by Charles R. Knight, under the direction of Prof. Henry Fairfield Osborn, in the scientific restoration of the early world. The lower section of the page gives a flash of the beautiful swamp flora of the ancient world as it was in the coal-making age, perhaps fifteen million years ago.

The Big Bad Lands of America

By Guy Elliot Mitchell

In the Black Hills of South Dakota President Coolidge is vacationing in a land rich in the historical romance of the nation. Here was the last battleground of the great Sioux Nation; here the immortal General Custer operated for many years; here the drama has been of man, and man alone. Yet, a scant fifty miles east of the State Game Lodge in the Harney National Forest where the President has established his summer White House, is the war torn battleground of the elements, the formidable, enchanting Bad Lands, once covered by an immense shallow sea and inhabited by huge reptiles and giant herbivorous animals. This area of ghostly towers, pyramids and spires, the work of erosion, covers several hundred square miles, including the greater portion of the northern neck of the Pine Ridge Indian Reservation.

THE Big Bad Lands of South Dakota have an interesting geological as well as human history. A spectral expanse of rock, with little soil and scant vegetation, these fantastic areas have for many thousand years been the battleground of the elements. Here wind and water sink their ramparts deeper and deeper into the earth, fling their grim columns against the defense of the countryside and mock the sagacity of man. Younger than the ancient Black Hills, they were still very old long before the first man came upon the scene.

These unexampled lands are big without a doubt, covering several hundred square miles, and considering their incapacity to sustain man or beast, they are exceedingly niggardly. From the earliest record of American history they have been considered quite terrible and uninhabitable, the name itself being a translation from the French name, *Mauvaises terres,* of the early hunters and trappers.

The Bad Lands are by no means unknown. Bordering the picturesque Black Hills they have been viewed by thousands of tourists, and in a great number of instances more adventurous wanderers have penetrated their solitudes and scaled their lofty pinnacles. In fact, it is but a scant fifty miles from the Bad Lands to the State Game Lodge in the Harney National Forest where President Coolidge has established his summer White House. From the top of Harney Peak the Chief Executive may look down upon this desolate wilderness of sinister forms and terrifying legends. In the scientific world the Bad Lands have been a magnet ever drawing the attention of the famous geologists. Professor Henry Fairfield Osborn's forthcoming great classical monograph of the United States Geological Survey on *Titanotheres* may tell us that this huge rhinocerous-like beast of the early world, different from anything now alive, made the Bad Lands one of its favorite resorts. Geologists will further tell us to a nicety in which geographical epoch or era these monsters lived, but when its age is requested in terms of years, the most satisfactory way to translate a geologic period for the layman's information is to say that it was "about several million years ago." The *Titanotheres,* consisting of a number of species of animal Titans, infested this region and their fossil remains have been found in such abundance in the soft rock that these have been named the *Titanotheres* beds.

Photograph by N. H. Darton

IN THE HEART OF THE BAD LANDS

Wierdly beautiful is this striking monument to the power of erosion, bordering the picturesque Black Hills. It is a vast and strange natural sculpturing, teeming with scientific interest.

Quite aside from the interest of the scientists in the rocks and fossils, the

Bad Lands are a rare and beautiful region. Here are possibly the strangest and most startling rock formations in the United States. They are not simply isolated towers and pinnacles, but a vast aggregation of strange sculpturings, the work of erosion. In the beginning, land-like characteristics developed when the Black Hills, now rising above the plain to an elevation of 7,000 feet, were a small, low island. An immense shallow sea surrounded them for hundreds of miles—as far west as the Rocky Mountains, then mere highlands rising above it. The average traveler of today, or even the bandits and Indians who have in comparatively recent years infested the region, would probably smile grimly at the statement that this portion of the country, now so arid and barren of all green things, was once a great inland sea. It is certain that they would laugh to scorn the assertion that it was later a vast tropical swamp among whose rank and luxuriant vegetation lurked strange and huge reptiles, and on the shores of which roamed giant herbivorous animals that were in turn preyed upon by the terrible flesh-eating monsters of the early world. Following these long ages of sea and swamp the whole region was caught in the dynamic forces from within the earth and thrown up thousands of feet; the hills became mountains and the bed of the ancient sea became a lofty plateau. Then the rivers began their slow work of cutting, carving and dissecting this tableland. The result today is the Bad Lands, where nature has chiseled the soft rocks into thousands of strange and curious forms. The rocks are mostly loosely consolidated sandstone and shale, generally in alternating beds of hard and soft material. The cloudbursts of spring and summer create innumerable rivers and rivulets whose rushing waters cut deep into the soft rock and clay of the old ocean bed.

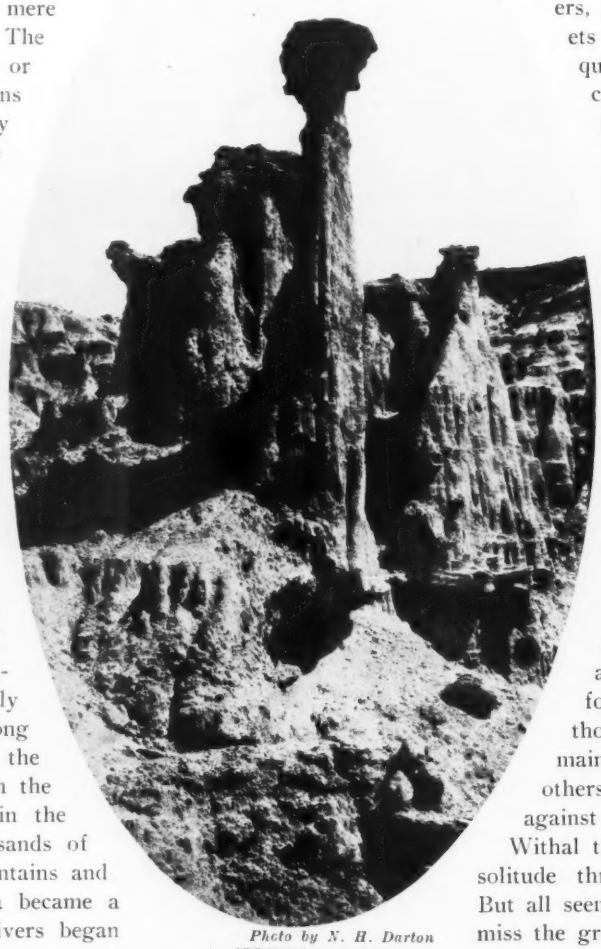


Photo by N. H. Darton

A STRIKING GROUP

Chiseled by Nature out of the soft rock, this might be a priest of old, garbed in flowing robes and with hand raised in benediction, conducting an ancient rite, his acolyte standing at his shoulder.

Despite their lack of verdure there is nothing somber about the Bad Lands; rather they are beautiful and stimulating. Unlike such Titanic carvings of Nature as the Grand Canyon of the Colorado or the Royal Gorge of the Arkansas, cut by a single river to a depth of thousands of feet, the Bad Lands constitute a network of relatively minute sculpturing, the result of intermittent erosion. The eye searches in vain for forests, green meadows, or shimmering lakes. Instead it sweeps across a chaos of shapes, some rugged, some gracefully carved, others grotesque and fearful. The bright western sun reflects the light from thousands of glittering towers, pyramids, buttresses, minarets and cathedral spires, all quite bare of vegetation, but casting back in subdued shades, every color of the rainbow. No fairyland of the imagination could picture a more wonderful variety of castles, with watch-towers, battlements and turrets, impregnable strongholds built on lofty cliffs dominating the surrounding country, until the domain of the next commanding castle or nestling chateau is reached. Many of these fantastic structures appear plainly to be crumbling, but this only adds to the romantic charm of the scene. Deserted fortresses and embattlements stand forth in crumbling ruins as though they must be the remains of an ancient civilization; others stand clearly defined against the blue Dakota sky. Withal there is a great silence and solitude throughout the Bad Lands. But all seems consistent; one does not miss the green of living vegetation or the absence of animal life. Here and there may be patches of green, near one of the scattered springs or in some hollow that retains a little moisture; but mostly there are only the ever changing shades of the rocks. Sheep Mountain is one exception. This is about the center of the Bad Lands and the highest part. It supports a scanty growth of grass and a small remnant of a herd of the great Rocky Mountain Bighorn, the lordly American wild sheep.

The view from the summit of Sheep Mountain comprises the most notable bad-land scenery in the world, according to N. H. Darton, geologist of the United

States Geological Survey, who pictures it graphically.

"Below lies the shattered and fantastic fragment of the once great plateau," he describes it, "carved and cut and twisted into thousands of queer and eerie shapes. There are groups of great, gray, bird-like forms; there are things with long necks and heads, there are shapes that might be taken for herds of some monstrous, unknown animals; gardens of giant mushrooms; even profiles and full views of the human face that might surely, from their appearance at a little distance, have been sculptured by clever workmen of some forgotten race, so perfect are the expressions of these heroic statues—all carved, however, by the rain and the wind blowing the sand particles against the soft rock."

Underwood & Underwood

THE SUMMER WHITE HOUSE

Here, in the beautiful Black Hills, not fifty miles from the Big Bad Lands, President Coolidge will enjoy a much-needed rest this summer, making the State Game Lodge in the Harney National Forest his headquarters.

In more recent years bandits and outlaws have added life and a romantic terror to the Bad Lands. Many a hard ride to the trailless confines of this barren wilderness has saved these desperadoes from avenging posses. Most of the Bad Lands, however, lie within the Pine Ridge Indian Reservation and it is in connection with the Sioux Indian tribes that they attained their greatest notoriety as being really "bad-lands." What remains of the great Sioux Nation now lives in this valley, somewhat to the south.

During the Wounded Knee outbreak of the Sioux Indians a large body of unruly savages invaded the ranches of the Black Hills and drove hundreds of cattle into the Bad Lands. Here they were practically immune from any ordinary pursuit. Herding the stolen cattle around the scattered springs and occupying the high plateaus and ravines near Sheep Mountain they eluded all pursuit and bid defiance not only to the despoiled ranchmen but to the Federal soldiers as well, keeping the region in a state of terror for a considerable period. When they had slaughtered most of the cattle they made further raids on the surrounding country. Finally, after a high carnival of pillage, and when the battle at Wounded Knee had forced the rest of the Indians to surrender, these savages returned to the reservation.

Ever since this outbreak peace and intense solitude have reigned in the Bad Lands; but deserted as they are today, except for the occasional traveler, cowboy, or Indian, the region was once teeming with animal life. Professor Osborne's description of the extinct *Titanotheres* leave no doubt that it would have been a great hunting ground for a race of giants, but for primitive man it would have been fatal. The *Titanotheres* would have made a large rhinocerous of today look like a sucking pig. The monster was about 14 feet long and stood 9 feet high. Against his charge an army of primitive savages would have been utterly helpless. Other monsters of the region were the *Oreodon* and the *Eletherium,* while a great cat, or panther-tiger preyed upon the herb eaters of the time. The bones of hundreds of these and other animals have been found embedded in the rock strata of the Bad Lands and many complete skeletons have found their way into museums.

Underground Fires

By J. B. Halm

During the strenuous fire season of 1926 several unusual things came under my observation, chief among them the treachery of underground fires caused by roots.

Nearly everyone has, at some time, seen harmless looking stumps standing near a dead fireline smouldering unnoticed and receiving only the casual glance or prod from the occasional passing patrolman. Perhaps in the course of two or three days, or even a week, fire would again break out mysteriously in that vicinity and all hands were once more desperately fighting the new fire; possibly the patrolman was discharged or put under suspicion or some disgruntled person blamed, but the harmless looking stump was overlooked.

During a serious blowup of the Quartz Creek fire on the Kaniksu National Forest last summer, the fire jumped Priest River and in an hour was rolling toward Whitetail, threatening to burn the lookout and destroy the entire Jack Pine Flats beyond. The men on the lookout fled for their lives, leaving their belongings behind. During the night, however, the fire subsided and the lookouts returned to their station. In two days this fire was trenched and under control. A part of the old Whitetail road which had served as a buffer to swerve the fire from its rush toward the lookout was used as a part of the fire line. Along the old road stood a large dead snag which burned so persistently that it was almost two days before it could be cut down. The stump was buried repeatedly but continued to smolder like a partially extinct volcano emitting an occasional wisp of smoke. After several days the stump and adjacent burn were considered dead, and the patrol had been cut to the minimum. Then one afternoon the lookout on Whitetail reported a fire near the old road, spreading rapidly. All available men were rushed to the spot and by midnight the fire had once more been put safely inside a trench.

The following morning, still bristling with the desire to do things to the person or persons responsible for that fire, I decided to make a thorough effort to locate its origin. We took the old road between the old and new burn and were just passing the old stump when our car broke through the tread of the roadway. Upon examination we found a root from the old outlaw stump had burned beneath the road and had broken out just 16⅛ feet from the old snag's base. The course of the root was easily traceable, disclosing the origin of the fire. Had the old roadway held up, the snag's secret might never have been disclosed and the cause of another fire remained a mystery. Had weather conditions been unfavorable the work of the the preceding three weeks might have been lost through the treachery of that root fire.

Another similar incident occurred on the same fire with less serious results, because the fire was discovered and subdued when small. This particular root led the fire beneath the trench for more than six feet before it broke out.

A root from the old outlaw stump had burned beneath the old road and broken out fully 16½ feet from the base of the old snag.

The course of the underground fire was easily traceable and its origin disclosed.

CAMPING AS SHE IS DID

By ERLE KAUFFMAN

EVERYWHERE there is activity. Noisy confusion brews and stews at every bend in the road. Traffic cops, road vendors, sign board artists are clearing the deck for action. The vehement eye of the countryside population and the sharply appraising, supercilious blinks of park police and forest rangers measure the onslaught of the untamed legions. The great American motor camper is loose again.

Westward from the settled acres of the east, eastward from the romantic plains of the west, the argonauts of 1927 have begun their processional.

For six months they will comb the gold-fields of pleasure with song and smile. During this period they will deftly scatter several million dollars in their wake, to reach the rich and poor alike, in every state, every county, and most every township. They will burn up several billion gallons of gasoline and motor oil and, according to the philosophical dissertations of our serious minded people, some several million feet of timber. They will invade National Parks, National Forests, municipal and city reservations, public and private camping grounds, street corners and back yards. They will be the fairest sight in all Christendom to some and the great uninvited guests to others. They will sweep everything before them, surmounting all obstacles, stopping only on top of the world to contemplate other conquests.

Westward from the settled acres of the east, eastward from the romantic plains of the west, the argonauts of 1927 have begun their processional. For six months they will comb the gold fields of pleasure.

They will come in twelve cylinder, eight cylinder, six cylinder, four cylinder and one cylinder contrivances, or they will sling their packs on their own care-free shoulders and seek an elusive paradise afoot. They will storm the vestibule of heaven under rigid rules and regulations. Speed cops, forest rangers, park police and village constables will lend to this national sport a deadly fascination. Federal, state, county and municipal treasurers will clap their hands in glee at this outpouring of folly.

Camping was the sport of the adventurous in days past, the hale and hearty; only in recent years have such a vast people engaged the countryside in deadly combat. During no previous time have campers evidenced so emphatically that camping is hard on national and private properties; and never before, in the course of these ceaseless wanderings, has the entire countryside met with such hideous disadvantages. Their sins are too numerous to catalog. Disregarding the time-honored custom of "America First," the camper has braced himself behind the wheel of his motor under the flaunting banner of "Campers First." From an honest and humble start, camping has become a grim and sober record of human indulgence.

At the outset, let us fall back a moment upon statistics. The United States Forest Service has compiled an unlimited amount of them, but our only interest here is that one-seventh of the total number of forest fires sweeping the timberlands yearly are due to the indulgence or carelessness of the camper. This is a fact, untarnished by

any effort to extract the bitter and insert the sweet. Further, the Forest Service openly winks at the suggestion that a higher percentage would be recorded if only the camper could be caught up with. To be perfectly frank and outspoken, the Forest Service, whether it cares to publish the fact or not, looks upon the camper as one of the great obstacles in the path to fire prevention and suppression.

Camping has achieved a unique position in our national life. As the popularizer of variegated vagabondizing it is a suave experimenter with human patience. It is eternally dibble-dabbling with the tranquility of the forested regions, burlesquing life in any number of moderately boisterous skits. It insists upon novelty by leading on the stage of life prosaic people with romantic tendencies; by allowing nature to administer unto these transgressors a terrific kick in the pants.

Like the vagabond, the camper was born with his soul condemned by that part of a world given to serious undertaking. He was fated to face a universe of suspicion and accusations, park police and forest rangers; and so far as it has been recorded there is but one event in his wayward life that conforms strictly to the wishes of an uncompromising world. Each year he leaves the forests and highways at the end of his two-week orgy to return to the city from where he came.

A curious people, in some respects; the only one of their particular kind that with ease and grace now do what no crusader or errant knight of old would have dared. They listen patiently, sometimes courteously, we are told to what the world has to say, indulge frequently in wise-cracks and smart-sayings and go on camping.

There are three distinct types of campers—the sportsman, the permanent camper, and the unrestrained, thrill-seeking motor camper.

Yes, take them all around they're a bad lot. Mischief seems to stew out of them naturally. The more the world growls, the more they stew. And further, they do not seek justification; their only claim on an unsuspecting public is indulgence.

While not meaning to be offensive in any manner or to scatter little knock-out drops calculated to waylay the best laid plans of our serious foresters, it does seem a worthy effort to attempt to discourage the mud throwing long enough to find out where it is spattering. Nor is this any attempt to excuse the guilty. Camping conditions will not be painted in an innocent blue; to the contrary, a very brilliant shade of red will flavor the picture.

Nor is it argued that the critics are not partly justified in their mud slinging. With the exception of the inexpressible few, campers are made of the stuff that may well cause them to decorate the pyramid of human blunders. They find nothing more convenient than to forget responsibility when they take their families, flivvers, and pet notions to the forests for an airing; nothing as suggestive as uncramped acres, nothing more inviting than a huge campfire. It is a lamentable fact, but an authentic one, out of which anything is likely to come.

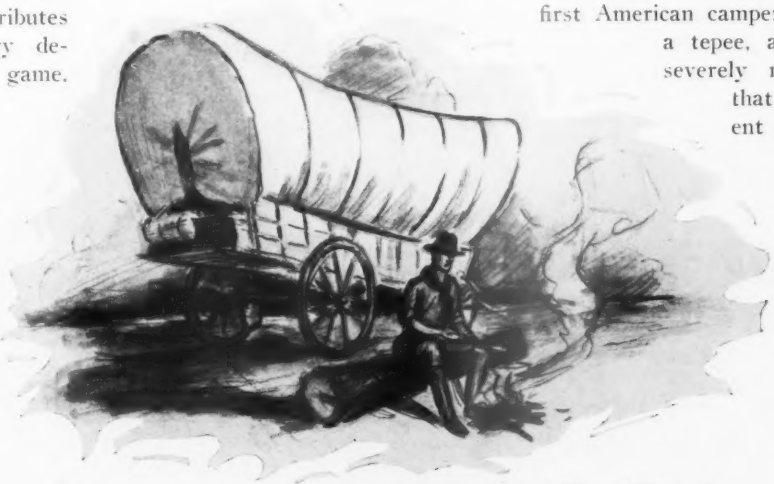
Without a doubt it constitutes a baffling hazard in forest fire prevention and forest administration. The implements employed as protective measures in this respect have not proven exceptionally advantageous to either forester or camper. Well patrolled and so-called fireproof camping districts have been created, advertised, filled, and burnt over; able practitioners have been employed to educate the public to fire prevention; drastic laws have been enacted and at times enforced. Vast areas have been closed to the camper and in instances they have been forbidden to light a match or smoke. Now wouldn't you think that such confinement and restrictions would stifle the camping urge in the hearts of mankind? But it doesn't. They go about their periodic wanderings just the same.

Possibly, without perplexing anyone in particular, there has been entirely too much of the general and too little of the particular. Classification of the camper has been tainted with the transgressions of a single type. The worst sin of the worst camper has been magnified a thousandfold, trimmed in utter desolation, and widely circulated. In contrast, a camper earns several blisters by burying the last faint spark of his camp fire, and the critics roll over on their side and yawn: "How in the world do you suppose that happened?"

There is no mystery about it. It is a matter of people. The same kind of people that hit-and-run day after day in city, town, or village. Every car owner, or rent-a-car-and-drive-it-yourself-if-you-can practitioner, or every friend of someone who owns a car, are embryo campers. Figure it out yourself.

There are possibly three distinct types of campers. The sportsman, the permanent camper, and the thrill-seeking motor camper. Of the three the sportsman is probably the most acceptable to the nation, primarily be-

cause he is too busily engaged in his sport to attempt to try out new camping devices on the forests and landscapes. He may bear watching in his exciting chase but, as a rule, his only contribution to fire hazards is his cigarette and match. Another thing, the sportsman buckles vehemently at the first hint of forest vandalism. To him the bars of the wilderness should never be lowered to the individual who contributes to the unnecessary destruction of wild game. He does not think of fire in terms of so much timber destroyed, but looks to the deplorable loss of game and the wiping out of his happy hunting grounds.



There is no proof that the covered wagon pioneer did not litter his trail with whimsical wreckage. He was amazingly akin to his present-day speed-loving cousin.

Now let's look in on the permanent summer camper who parks his tent and family right at your back door or under your favorite pine. Careless with fire? Heavens, no! All they do is cook and clean up. It's their summer home, isn't it? Yes, they do throw tin cans and paper around rather thoughtlessly at times, but one can't bury everything. Natural fishermen and hunters by their own admission. Of course they know the limit, fifty trout a day per man; and really, there is no need for more than fifty trout, that is, fifty large ones.

Comes the motor camper. Pale, half-frightened, unrestrained, irresponsible, attractive in neat camping conveniences, they penetrate the forest depths with the precision that is hardly calculable. Day in, day out, these pilgrims of a strange calling gouge their way into the wilderness without a first thought of consequences. They tear loose from every restriction in the code book of life and don't care a whoop who knows it. They do not necessarily harbor a desire to wilfully destroy, nor do they burn, slash, or mutilate for the sheer joy of the deed. It is the tendency to be dramatic, to play until they have played enough that ranks their number with vandalism. They want to be spotlighted and heralded. They want everyone whose lives graze theirs to feel the quivering vitality that subcharges the existence of the adventurer, the worldly wise, the vagabond. They are too busy worshipping at the altar of make-believe to listen to the need of more material things. But isn't that just what most of us do when we close the book of labor and hie to vacation land?

The story of the camper and his gradual advance from the primitive state, long before the beginning of recorded history, down to the present time, has been a curious expression of emotional chaos. He has been responding to a personality that needs no expounding. It is forcibly illustrated by the facination of the daily pilgrimages.

Many years ago, as one may well guess, in the era of moccasins and the trusty bow, the first American campers called their tent a tepee, and instead of the severely nonchalant manner that characterizes present day campers, they utilized fantastic and inspired means of inflicting upon their contemporaries a special and ingenious sort of hell. Or looking back to when King Tut was a mewing infant, humanity unerringly followed the erratic course of camp lore. America's own covered wagon days were but a replica of what had passed before. These pioneers represent to us today a higher type of American, forging the chains of our nation, risking their lives and fortunes for expansion. This may be very true in its fullest sense, but it is also likely that they did not go on these suicidal pilgrimages because of a sense of patriotic duty; instead they were dramatic young men seeking relief from morbid and gaudy humdrum. Their actions did not conform with any specific set of rules and regulations; rather they followed the simple regime of fight Indians today, travel tonight, tomorrow cannot be helped.

The camper is of this breed. The covered wagon vagrant, whose one sinew was survival, was amazingly akin to his present day speed-loving cousin. In sense and sentiment both are nomads. Further, there is no proof that the covered wagon pioneer did not litter his trail with whimsical wreckage.

The camper is on the great upward trend. He is finding the camping days brimming over with golden secrets eager to be gathered in. He is gradually learning the principles and policies of safe and sane procedure. He is finding out when to take a chance and when not to. Road problems, motor problems and fuel problems are fading before the major problems of common sense, courtesy and national enterprise. Outside education is not so essential as inside understanding, and the quickest and straightest way to this attainment is the first road to the forest. There is an old saying that "seeing is believing, but feeling

(*Continued on page* 448)

Street and Roadside Trees

By Furman Lloyd Mulford

THE traveler who journeys over this vast country of ours soon comes to appreciate any bit of well shaded highway that he may encounter. And the chances are he will carry with him a permanent impression of the beauty of that section of the country where he finds it. More of these impressions are probably to be gathered in the states along the Atlantic seaboard than in any other section of similar area, although there are many other parts of the country that have stretches of beautiful tree-bordered roads. Yet few stop to consider whether these just happened or are the result of man's conscious effort. Not only does our Latin tell us of the good roads the Romans built to connect the various portions of their empire but examples of them still exist in the Old World. Although these were substantially built they were not comparable to our more modern road systems, the first of which were developed after the advent of the mail coach in France about the thirteenth century. Nearly three centuries later what was probably the first roadside tree planting by the State was done in France under Francis I., who directed that Lombardy poplars be placed along many of the post roads. His son Henry I. also advised planting along the highways but it was left for his grandson Henry II. to require property owners to plant trees along the roads on which their property abutted. He even went so far as to require that the elms be watered. In the next reign mulberry trees were planted along the roads at the expense of the government. From then to the present time activity and comparative inattention have alternated in furthering roadside trees, but apparently when interest in planting was slumbering interest in keeping up the existing trees was luckily not lacking. The wonderful tree-lined roads of which we hear are thus the cumulative result of four centuries of somewhat intermittent effort. In this country roadside trees were in evidence in the youthful days of the Massachusetts Colony and early laws imposed fines for their mutilation. Indeed a record still exists of a row of trees planted as early as 1725 apparently by the selectmen of Boston. So public planting of trees in this country goes back to early days although it has not been followed generally or vigorously enough to make our roadsides as beautiful as they should be. This early interest undoubtedly had much to do with the attractive New England roadsides of today.

SOUTHERN OAKS AND SWEET GUM LINE THIS LOVELY OLD SOUTHERN ROAD, OUTSIDE OF SAVANNAH

In the open country many of the trees are volunteers along fences and stone walls but even these have been more or less protected. In the villages there has certainly been much planting. The uniformity of tree locations with relation to the house and the street suggest beyond much dispute the intervention of man in the choosing of these sites. The trees have been placed as much with a thought to the comfort of the home as to the beauty of the street, and they have added as much to the one as to the other. Indeed the people of Massachusetts have a law that makes it possible for the town to mark a desirable tree on private property as being of public value. Thereafter the owner of the land has no further control over the tree —neither to trim nor cut it without the consent of the town authorities. In the other original colonies there has not been as much attention to tree planting along the roads. Farm homes were usually built back from the highways so that the home ground planting made no part of the roadside picture. And although those other colonies did not contribute as much as New England to the beautification of the roadside it was not because they lacked appreciation of beauty or the possibility of securing it. Their home surroundings were well planted and the private roads leading from the public highway were apt to be planted with trees that still remain handsome avenues. In western New York and

ALONG AN EASTERN HIGHWAY—ABSENCE OF PLANT GROWTH CONTRIBUTES TO A DESOLATE APPEARANCE HERE AS SURELY AS ON THE WESTERN PLAINS

Ohio, New England practices seem to have had a marked influence, both in home location and in tree planting, so that there is a suggestion of New England in the use of trees, even though the fence rows have been kept relatively clear of volunteers and the predominating tree is sugar maple instead of American elm. In American planting the tendency has been to use native trees. In New England the American elm, *Ulmus americana,* is predominant. It is an excellent tree in all the northeastern states as well as in the drier country farther west even to the foot of the Rocky Mountains. Unfortunately it is subject to the attacks of the elm leaf beetle and should be used with caution.

Another tree that is worthy of being used as a roadside tree, and has been so used in some places in sufficient quantities to give character to the region, is the sugar maple, *Acer saccharum* This is the best tree for Kentucky, Ohio, northern and western New York and Vermont. It likes gravelly sub-soils and the open country. Another region that has adopted trees from the nearby woodlands for its ornamental planting is the coastal region from near Cape Hatteras to the Mexican border. The most striking tree used here is the live oak, *Quercus virginiana,* which is a broadly spreading oval tree with long horizontal branches. In the moist coastal atmosphere it does best, and is there clothed with heavy festoons of Spanish moss, though it is to be found inland almost to the foothills. It is a slow grower, comparable to the white oak, *Quercus alba,* in that respect, but it has so many good qualities that it is deservedly much used.

The water oak in recent years is being as much planted from tidewater Virginia to Texas, outside of the mountains, as is the live oak. Unfortunately this name is applied to three different trees similar in appearance but botanically distinct. Two of them are desirable but the third is almost as much of a weed among street and roadside trees as is the silver maple.

IN CONTRAST IS THIS BEAUTIFUL WOODS-LIKE PLANTING ON PRIVATE LAND ADJOINING A MAIN HIGHWAY, AND ADDING GREATLY TO ITS ATTRACTIVENESS

The water oak of Florida and nearby regions of Georgia, South Carolina, Alabama, and Mississippi is an evergreen with a tall oval head and shiny oval leaves not unlike small laurel leaves. This similarity gives it its proper common name the laurel oak, *Quercus laurifolia*. This is an extremely valuable ornamental tree and has an especially good variety with a more nearly round head, the Darlington oak found in the neighborhood of Darlington, South Carolina.

The other good variety of water oak is the willow oak, *Quercus phelloe*, a truly deciduous tree found from

years ago. Their fine wide streets were planted with oaks soon after the town was laid out in the early thirties. About the time I saw them half the trees were dead. Those remaining were principally willow oaks with here and there a laurel oak all in excellent condition. A few water oaks still lived but in every case they were in poor condition, some barely showing evidences of decline, others so far gone that they were unsafe; but there wasn't a single good one!

For the northeastern United States there is probably no better tree for street and roadside planting

THE ARCH OF THE ELMS—LOOKING DOWN NEW HAMPSHIRE AVENUE, ONE OF THE BROADEST AND MOST BEAUTIFUL THOROUGHFARES IN THE NATIONAL CAPITAL

New Jersey to Texas except in the mountains. It is an oval headed tree with distinctly willow shaped leaves as to outline, but with perfectly smooth edges like the laurel oak and the live oak.

The tree to which the name water oak, *Quercus nigra*, really belongs is relatively short lived with leaves about the size of those of the laurel oak and the willow oak, but usually with three lobes near the apex, often with more farther down, the terminal lobes at least ending in a bristle. All three of these oaks are readily transplanted from the wild by removing all the side branches, seemingly like planting a pole 10 or 12 feet high with a mass of roots attached. They will all do well for thirty or forty years after which the true water oaks will begin to die out. A good example of this was found in Tuscaloosa, Alabama, a number of

than the red oak, *Quercus borealis maxima*, formerly, *Quercus ruba*. It is handsome, quick growing and long lived and seems to withstand adverse conditions remarkably well, for it succeeds within the reach of ocean spray as well as on high and dry ground. Its upright habit of growth as well as the clean shedding of its leaves in the fall gives it an advantage over the pin oak. The pin oak, *Quercus palustris*, is, however, another good tree of almost as rapid growth and with equally brilliant autumn coloring of the foliage. It succeeds on heavy unresponsive clay soils where many other trees fail. If planted near traffic it demands frequent attention to remove the lower branches as they droop too near the ground.

The other native oaks have been little used in this way, but there is no reason why they should not be.

The rock oak or rock chestnut oak, *Quercus montana,* would be especially suited to dry gravelly ridges and the scarlet oak, *Quercus coccinea,* is also a handsome tree of rather wide adaptibility.

The tulip, *Liriodendron tulipifera,* is likewise an excellent roadside tree and well suited to suburban streets, but does not thrive so well in the built up sections of cities, especially in those portions with row houses on lots of less than 150 feet deep. Basswoods or American lindens, *Tilia americana,* are also well adapted for similar conditions and are especially acceptable to bee keepers. In fruit sections, where bees are especially needed for orchard pollinations, these trees would extend the season of bee pasturage and would contribute much to the appearance of the roads.

A STUDY IN SHADE TREE RESULTS—THIS CITY STREET WAS PLANTED TO YOUNG PIN OAKS ABOUT THREE YEARS BEFORE THE ABOVE PICTURE WAS TAKEN, AND THE PICTURE BELOW IS OF THE SAME SPOT ON THE SAME STREET FIFTEEN YEARS LATER

Of the maples the red maple, *Acer rubrum,* is the only one in addition to the sugar maple that has value for either street or roadside planting. It is not adapted to extreme city conditions, but thrives near the sea coast even where the spray of the surf may at times blow over it. The silver maple, *Acer saccharinum,* has probably been more planted in America than any other tree; but it is too brittle to be satisfactory, except in some of the dry regions of the far west where other trees will not succeed. The Norway maple, *Acer platanoides,* is a beautifully shaped tree with handsome foliage, but its top is so dense and it heads so low that it should be used as a lawn or park tree, where the branches may be permitted to rest on the ground in the same way that beeches are grown. If it is headed sufficiently high to permit traffic beneath it, much of its beauty is destroyed and it takes constant attention to keep it thin enough to permit grass or other ground covers beneath.

Among the exotic trees the Lombardy poplar, *Populus italica,* probably fills a unique position. It is practically the only deciduous tree with the tall columnar form, and it thrives in that portion of our country where it is most needed. Another good exotic that is most ornamental and is well adapted to the eastern part of the country is the ginkgo, *Ginkgo biloba.* Its appearance is so distinct that it cannot be used indiscriminately with our native trees. The Carolina poplar, *Populus engenei,* is one of our much used trees that is probably of foreign origin; but it has made itself so thoroughly at home here that it is not recognized as such. This species should not be planted except in some of the drier sections—it

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A Town That Knows It

PORTAL ERECTED BY THE PEOPLE OF DOUGLAS, ARIZONA, ACROSS THE BANKHEAD HIGHWAY

By Fred Winn

THE citizens of Douglas, Arizona, are keenly alive to the value of the forests which, even if distantly located, as distances are measured in Arizona, have an important bearing on the welfare of the town. To the north, northeast and northwest are such mountain ranges as the Huachucas, the Dragoons, the Chiracahuas, the forested slopes of which conserve the scanty water supply of the adjacent valleys, furnish wood for the homes, smelters and mines, provide the stockmen with range for their cattle and horses, the sportsman with game and by no means least, the people of the town with ideal play-grounds and recreational areas, far from the heat of a southern Arizona summer. It is this recognition of the value of the forests on the part of a town reposing in a veritable desert which led to the organization of a volunteer forest-fighting force composed of the leading citizens of the community, a force which is ready to respond to the call of the forest rangers at any time of the day or night. And it led also to the erection of a conspicuous portal over one of the main transcontinental highways leading through the city to points east and west. Douglas in her desert surroundings sets an example which might with value be adopted by other communities having more favorable forest environments, for to Douglas, "Prevent Forest Fires" is more than an empty slogan. It means prosperity and happiness to its people.

The Part of Forestry in Flood Control

By W. B. Greeley
Chief, United States Forest Service

THE Mississippi basin contains about 89,000,000 acres of forested or denuded land, which has little or no utility, except in growing timber. No one can assert that the condition of this vast land surface, or the degree of care or of neglect which it receives, have no bearing upon the flow of the Mississippi River.

We must approach this question with sanity and common sense. Forests do hold back flood discharges, but they cannot prevent large floods when heavy rains occur. Any reservoir overflows when it receives more water than it can hold. Likewise, forested land overflows after it has become fully saturated with rain. Furthermore, any benefits derived from reforestation cannot be secured overnight. They will come about only through a long space of time.

Hence, forests cannot be substituted for the engineering structures upon which our main reliance must be placed for controlling heavy flood discharges. They can supplement dams or levees, but cannot take their place. In dealing with this problem, forestry should be the hand-maiden of engineering; but as a hand-maiden it has a valuable service to offer.

Many factors influence the behavior of streams. The cover of forest or other forms of vegetation on their drainage basins is but one. The soil and subsoil, the rock strata, the topography, the amount, kind and concentration of precipitation, the seasonal range of temperatures—all have their part. We must be cautious in describing the rôle of forests, and cannot do so in exact terms. Nevertheless, their rôle is important.

In the first place, forests cause a more gradual melting of snow. Forests moderate both extremes of temperature. They are warmer than open land in winter and cooler in summer. As spring comes on, snow melting may begin earlier in the woods. On the other hand, it usually lasts longer in the woods than on exposed ground. The common effect of forest cover, borne out by many observations, is to retard the melting of snow after warm weather sets in.

In the second place, forests reduce erosion. Any vegetable cover tends to reduce erosion. But forests usually perform this function more effectively and permanently than any other type of vegetation. This is because of the thick mulch of leaf litter and branches which they drop upon the ground. Furthermore, they are constantly feeding humus into the soil itself, increasing its porosity and binding its mineral constituents. And the mass of roots of the trees and shrubs have an enormous binding power of their own.

The actual effect of forests upon erosion cannot be gauged without considering other factors, particularly the character of the soil and topography. The streams of the northern Lake States, for example, largely drain porous soils containing much sand and fine gravel. These soils have a high humus content, thanks to the stands of pine and spruce and hemlock, which once covered them. Their drainage basins contain much lake and swamp storage and receive a heavy snowfall. All of these facts tend to keep them clear, regardless of the presence or absence of forests today. Hence, the Mississippi River above St. Paul, with a basin of 19,585 square miles, carries a yearly silt discharge of only 117,000 tons.

The Tennessee River, on the other hand, with a catchment area less than twice as great, carries an annual silt burden of 11,000,000 tons. The Appalachian region which it drains is a country of light snowfall and of irregular and often concentrated rains. It contains few lakes, but is made up chiefly of heavy, compact soils, which easily erode. On such basins, forests exert their maximum influence in reducing erosion. And what is true of the Tennessee, applies equally to many of the middle and lower tributaries of the Mississippi, which drain the Appalachian and Ozark regions, and the lower hills around them.

The actual effect of the loss of forest or brush cover upon erosion has been demonstrated at many points. The gullying of abandoned fields and of logged-off and

Gifford Pinchot, former Governor of Pennsylvania, and Colonel William B. Greeley, Chief of the United States Forest Service, were the spokesmen for forestry and conservation at the Mississippi Flood Control Conference, held in Chicago on June 2, 3 and 4. Both addressed the conference on the morning of June 3. Mr. Pinchot discussed flood control of the Mississippi River as a broad problem, declaring it to be a national one whose solution demands that the Mississippi River be treated as a unit from its source to its mouth. He said that floods are getting worse because of what we have done to the river in the way of deforestation, clearing of lands and drainage of swamps. He urged that no single means, but every means, should be utilized in working out permanent control of the river. While levees are clearly the first line of defence, he said, spillways, reservoirs, reforestation and the development of other relief measures are essential if permanent control is to succeed.

Colonel Greeley in his address confined himself to a statement of facts showing the part which forests play in flood control. In dealing with the problem, he said, forestry should be the hand-maiden of engineering, and as such it has a valuable service to render. Extracts from Colonel Greeley's statement, which is a clear and forcible contribution to the subject of forests and flood control, are presented herewith.
Editor.

burned-out woodlands on the slopes of the Appalachians has been striking. So was the washing of soil from the forested area in Tennessee, killed out years ago by the Ducktown smelter fumes. The cutting off of forest cover on a small watershed in Colorado, although in a region of coarse, permeable soil, increased the volume of silt discharged eight and one-half times and increased the flood silt load twelve times. The burning out of a small brush-covered canyon in southern California, in 1914, was followed by a silt discharge in a single year of 100,000 cubic yards of soil from a basin containing little more than one square mile. Disastrous erosion has followed every forest or brush fire in the rugged gorges of Southern California.

The denudation of a large area in the Sacramento Canyon, by smelter fumes, in a region of steep slopes and friable soil, has been followed by the erosion of fifty cubic yards of earth per acre annually. The soil content of these streams has ranged from thirty to one hundred and fifty times as much as the soil carried by adjacent streams still protected by the normal brush and vegetative cover of the region.

Our main interest here in the value of forests for reducing silt discharge into the Mississippi River lies in the enormous area of easily eroded soils on the tributary streams from the Appalachian Plateau, the Ozark Plateau and the great plains. The cumulative effects of such erosion add enormously to the flood problem. Among them are its cutting action upon banks and channels, the shifting of currents to new courses and the gradual building up of the river bed in its lower reaches which slowly reduces the effectiveness of levees. Engineers can appraise much better than I the exact proportions of this problem. Forestry, by no stretch of the imagination, offers a complete remedy. There is no complete remedy for the natural and inevitable process of erosion, whereby the Almighty decreed that the mountains should, in the course of ages, be carried down into the sea. But forestry and other means of improving the vegetative cover of these great drainages do offer an ameliorating influence. They can aid materially in lightening the tasks of the engineer as well as conserve our mother earth for its many beneficial uses in the place where it belongs.

Aside from slowing up the melting of snow and reducing erosion, forests do, in some measure, create a surface reservoir that holds back part of the rain and feeds it into the streams more slowly. The trees and bushes themselves intercept some of the rain and delay its progress to the earth. The mat of litter found under thrifty, unburned forests—sometimes only a few inches deep, sometimes a foot or more—acts like a sponge. It absorbs water until it can hold no more.

A German scientist, trying to discover what becomes of the annual rainfall, found that in open areas 54 per cent of the water precipitated filtered into the earth, while forest land having similar soil and topography soaked up 74 per cent of it. An exact comparison of forested and denuded watersheds was carried for many years in Switzerland. It showed that the wooded drainage had a more uniform discharge, and that the flood crests from the denuded basin carried from 30 per cent to 60 per cent more water per unit of area than those from the forested streams.

Several years ago a disastrous flood at Pueblo, Colorado, was caused by local cloudbursts. In the canyons most completely denuded the crest of this flood occurred within six hours from the start of the storm. In the forested canyons, which received the same rain, the flood crest was not reached until from 18 to 48 hours after the beginning of the storm, and the damage resulting was materially less. Preliminary observations on another watershed in the Rocky Mountains indicate that cutting off the forest cover increased the average height of flood crests, and the ratio between high and low water stages by about one-half.

A study was made by the Forest Service in southern California showed that within three years after the brush cover on a canyon drainage was destroyed by fire, the soil lost 45 per cent of its water absorbing capacity. This was due partly to the direct loss of humus and litter, and partly to the rapid erosion of the surface soil, exposing the more compact and impermeable sub-soil. A heavy rain occurred in the southern California Mountains early in 1915. The run-off from the small canyon to which I have previously referred, which had been denuded by fire during the preceding fall, exceeded that from all other streams which experienced the same storm. Its flood peak attained the unprecedented flow of 700 second feet per square mile of catchment area. The value of forest and brush cover to stream flow is so well recognized in southern California, where stored water is the life blood of agriculture, that all agencies, federal, state and county, have joined with the water users in a $2,000,000 program for protecting and extending the vegetative cover on their watersheds.

Now, what can be done to bring the protecting and conserving influence of forests to bear most effectively upon the Mississippi floods?

Every forest fire in the Mississippi basin tends, sooner or later, to augment flood conditions. Every abandoned or neglected piece of poor hillside farm land has the same tendency. Destructive lumbering or overgrazing, which leave naked soil behind them, are sure to contribute, at one time or another, to some flood crest. Some of these conditions can only be remedied by the type of educational extension in agriculture and forestry now being conducted by most of the states in cooperation with the Federal Department of Agriculture. Some of them can be remedied by more direct means.

In the main, the existing federal laws are adequate. We have a law under which the national government cooperates with any state in the systematic protection of forested and denuded areas from fire. The law is all right, but we need more actual protection under its terms.

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Planting Old Glory on the Dome of Montana

How Three Foresters, Undaunted by the Failure of Others, Conquered Granite Peak, King of the Granite Range

OLD GLORY ON THE PINNACLE

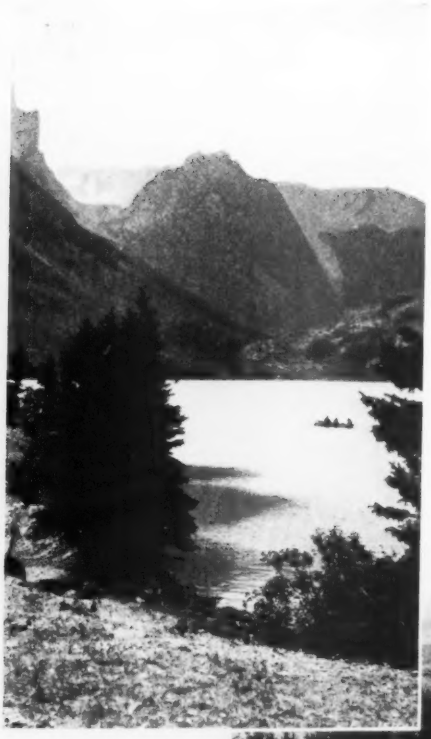
By R. T. Ferguson

ENTERING Eastern Montana via the Northern Pacific Railroad or the Yellowstone Trail, one obtains his first view of the perpetually snow-capped Granite Range as he approaches the city of Billings. Gradually but formidably, the range unfolds itself on the distant horizon to the southwest where the Yellowstone National Park and that quaint old mining town of Cooke City have long written history. Here are the Beartooth Mountains, the most rugged range in that magnificent state whose name "Montana," in the language of the Indians, means "shining mountains." The principal streams of the range have their source within a comparatively few miles of each other in a region of pinnacles, glaciers, deep gorges, snow fields, meadows and lakes.

Situated at the remotest point in this rugged and inaccessible country towers Granite Peak, King of the Granite Range and the highest point in Montana. It ascends in majestic glory from a vast and confusing region cut by many impassable barriers. Few persons have ever gazed on the grandeur of Granite Peak at close range, though many of the multitude of tourists who pass along the roads and trails of Yellowstone Valley see in the far distance the summit of this massive pinnacle, too steep to support a mantle of snow, yet protruding above the lesser snow clad peaks which entirely surround it. Few of that multitude know that they are gazing up to the very dome of Montana, supreme in its solitude and until recently unconquered by man's adventurous spirit.

Granite Peak, rising 12,842 feet in elevation, is at the east end of a chain of four gigantic peaks. The other three are Villard Peak, 12,300 feet, Mt. Spofford, 11,780 feet, and Glacier Peak, 12,200 feet in elevation. Nowhere else in Montana, not even in Glacier Park, is there a peak which rises to the 12,000-foot elevation. This chain of peaks is flanked by innumerable perpetual snow fields and many large glaciers, such as the famous Grasshopper Glacier and the no less interesting Granite, Skytop and Hidden Glaciers. To get within striking distance of Granite Peak from the end of any existing road or trail requires not less than two long days of extremely hard labor by those hardened to the roughest kind of mountain hiking.

The first organized effort to climb Granite Peak was made in September, 1889, by a United States



EAST ROSEBUD LAKE

Geological Survey party in charge of Mr. E. M. Douglas, who at that time was making the first reconnaissance map of this region. Picking the main ridge on the south slope as the most feasible route, the party reached a point within 200 feet of the top where it encountered a series of vertical cliffs and could proceed no further. Inclement weather which followed made any further attempts impracticable. Members of Professor James P. Kimball's party who made an intensive survey of the Grasshopper Glacier in 1894 climbed Mt. Villard, Mt. Wilse, Mt. Wood, and most of the other neighboring peaks but failed to reach the summit of Granite Peak by several hundred feet.

In the latter part of August, 1910, Mr. Fred Inabnit of Billings, a native of Switzerland and an ardent lover of mountain climbing, headed an expedition from Rosebud Lake to Granite Peak, but after viewing the peak carefully with glasses from the top of Mount Tempest, decided that the northeastern ridge and north slopes were all impregnable and that it would be necessary to find a more feasible approach to the top from the Skytop Creek slope on the south side. An effort was made to cross Granite Creek above Avalanche Lake and work around the base of the peak to the Skytop Glacier, but the party encountered a severe snowstorm and was forced to retreat down Granite Creek where wood and shelter could be secured. Again the undertaking was abandoned.

In August, 1914, J. C. Whitham, Forest Supervisor, headed an expedition to climb Granite Peak from Rosebud Lake, but the party was too hastily organized and upon reaching the top of Mt. Tempest and the upper end of Rosebud Plateau where no wood or fuel of any kind could be found they were forced to burn their walking sticks in order to boil coffee. An uncomfortably cold night on the 29th of August was spent at a camp at the 12,200-foot level where the water in their canteens froze almost solid. They also found it necessary to abandon the attempt.

In August, 1922, Mr. Fred Inabnit again headed a party of five enthusiastic and fully equipped mountain climbers toward the top of Granite. On this trip they manpacked through the Beartooth Mountains for over two weeks and swinging around Granite Peak approached it via Skytop Creek from the southwest. After some most difficult climbing, in which ropes and all other equipment known to experienced mountaineers were used, they reached one of the big sawtooth notches between two main pinnacles of Granite Peak, scarcely 300 feet from the top. Here, however, they encountered vertical cliffs. In fact, Mr. Inabnit said, they leaned backward. After trying for several hours to find a route to the top, they were

PART OF THE INABNIT PARTY IN CAMP. THE MAN WITH THE HAT ON IS FRED INABNIT

LOOKING UP AT GRANITE PEAK FROM AVALANCHE LAKE—THE MASSIVE PINNACLE IS TOO STEEP TO SUPPORT A MANTLE OF SNOW

forced to give up and to hasten to their camp at Skytop Lake.

Not discouraged by his former fruitless attempts, Mr. Inabnit planned to organize a party to climb the peak in August, 1923. The United States Forest Service had become sufficiently interested in the scaling of Granite Peak to send an official expedition into the field, headed by Assistant District Forester Elers Koch of Missoula, Montana. The two parties agreed to combine forces and to meet at Rosebud Lake on the evening of August 25. In addition to Mr. Koch, the Forest Service party was composed of R. T. Ferguson, Forest Supervisor of the Beartooth National Forest and J. C. Whitham, Forest Supervisor of the Kaniksu National Forest.

Promptly at 7 o'clock on the morning of August 27, with crisp weather and a settled barometer, the party of nine mountaineers with three pack horses bade adieu to the guests of East Rosebud Chalet and, with a firm determination to reach the objective, started up the winding Slough Creek trail. As the party rounded the eastern point at Mt. Fairview, the first view of Granite Peak burst into sight, protruding over the top of Froze-to-Death Peak and Mt. Tempest, its black rocky shoulders standing out in sharp contrast above the perpetual snowfields of the Upper Rosebud Plateau and silhouetted against the billowy clouds which lurked in the distance. The party continued to the base camp on the extreme head of Slough Creek just at timberline, where a well sheltered camp was found with plenty of of wood, water and horse feed.

300 FEET FROM THE TOP—AN ALMOST UNINTERRUPTED SCENE OF BROKEN GRANITE WALLS

INABNIT LEADS THE WAY ACROSS THE SNOW

SUPERVISORS FERGUSON AND WITHAM AND ASSISTANT DISTRICT FORESTER KOCH,—THE SUCCESSFUL TRIO WHO REACHED THE TOP OF GRANITE PEAK ON AUGUST 29, 1923

The trip from this point was accomplished by manpacking over a rough country without trails. Each man carried his own blankets and four days' rations in a pack which weighed about thirty pounds.

The route led up through Froze-to-Death Pass and along the rim of Phantom Creek Canyon, with the Septum and Gnome Icefields directly opposite.

Between Mount Tempest and Granite Peak is a deep canyon. After lunch the party began the descent to Avalanche Lake, a drop of approximately 1,800 feet over a most difficult but the only available route, which in places led across slide rock on slopes too steep for it to be stable and then around narrow ledges on cliffs which gaped off into dizzy depths below. The lake shore was reached at 4:00 p. m. where camp was pitched. A reconnoitering expedition scouted the base of Granite Peak to the Skytop Glacier, while the rest of the party made camp. The reconnoitering party worked its way up to the point where Mr. Inabnit had begun his unsuccessful attempt to climb the peak in 1922. Each ridge or possible approach to the top of

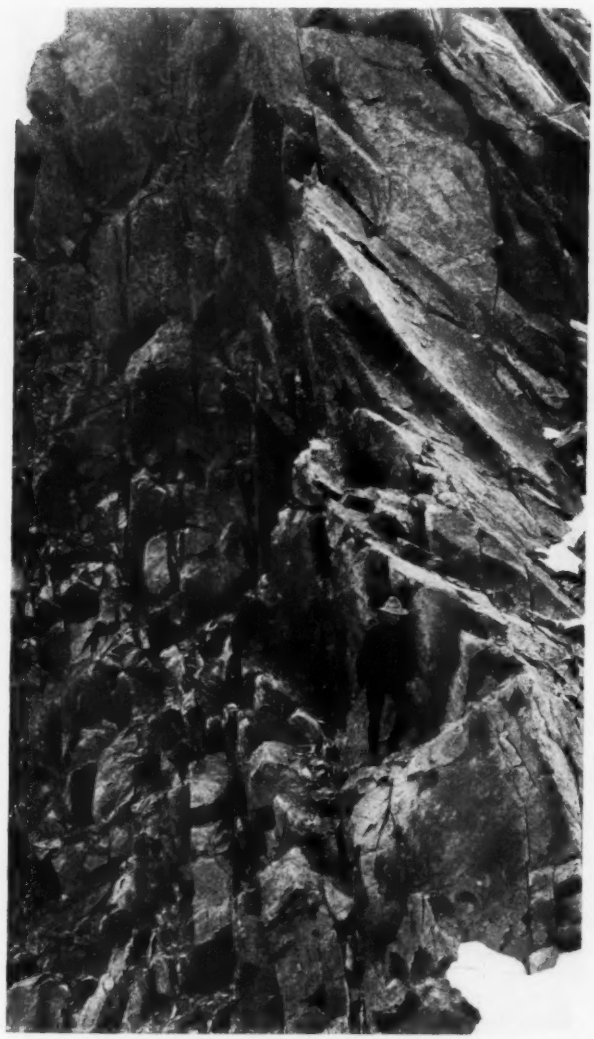
WHERE THE MOST DANGEROUS PART OF THE TRIP WAS ENCOUNTERED AND A SLIP MEANT A DROP OF 2000 FEET TO THE GLACIER BELOW

the peak was as carefully scanned with glasses as time would permit, after which the party returned to camp, convinced that there was no easy route up Granite Peak and that the only way it would ever be climbed would be through laborious effort intermingled with a lot of good luck and favorable weather conditions.

A conference was held and it was decided that the party should divide, and the ascent on the next morning—August 29, 1923—should be attempted from opposite sides. The Forest Service selected the northeast ridge extending towards Mt. Tempest, while the other members chose the southwestern slopes. Each man stripped off every ounce of non-essential weight, carrying only a light mountain staff, the minimum amount of clothing for fair weather, provisions for that one day, and such necessary party equipment as a barometer, scaling rope, flag, field glasses, kodak supplies and a chisel. The weather appeared settled and favorable.

The route taken by the Forest Service party was the most precipitous, being directly up the eastern slopes of Granite Peak, but it was for the most part out in the open slide rock where a maximum pace could be obtained. Seven hundred feet in elevation was gained before the first breathing spell was taken, and five hundred feet at the next pull, after which the climbing became extremely difficult. The pace had to be slackened and breathing spells taken more often as the altitude began to be felt and minor rock-walled promontories were encountered. Almost 800 feet below the summit the first continuous break in the ridge was encountered. This was a narrow saddle with a comb of snow in the bottom of it from which the slopes cliffed off at an alarmingly steep angle to the Granite Glacier on the north and the Skytop Glacier on the south.

Up to this point the climb had been merely a steep uphill scramble over broken talus slopes. The break in the ridge gave an opportunity to see what lay ahead and it looked anything but encouraging. It was manifestly impossible to continue direct up the back-bone of the ridge from the saddle so it was necessary to swing around below the crest on one side or the other. The formation was more broken on the south side, which condition seemed to offer better chances for hand and foot holds, so it was decided to try it. Working slowly and cautiously, and testing each hand and foot hold, the party wormed its way upward and onward. The rock proved to be rather loose and the greatest of



KOCH AND FERGUSON WORKING THEIR WAY SLOWLY UP THROUGH THE PRECIPITIOUS CLIFFS NEAR THE TOP OF GRANITE PEAK

care had to be exercised to avoid rolling loose rock upon those below. The top of this fissure was finally reached, which brought the climbers out on a spur ridge on the north side. From here, it was possible to work back on to the main ridge where a glimpse of the summit could be obtained. In this manner the struggle upward continued until at a point approximately three hundred feet below the top the most abrupt cliff yet encountered blocked the way. Only three routes appeared feasible but all proved to be impregnable after determined attempts had been made to gain the top. It began to look as if another attempt at old Granite was doomed to failure as we were now confronted with an uninterrupted extension of the same series of cliffs and broken wall of granite which had been the undoing of so many expeditions in the past. After retiring to a high point opposite the first cliff and scanning it carefully with glasses, there appeared to be just one fissure or chimney which could possibly be scaled, although it appeared simply to lead to the top of a rugged spur ridge which was some distance from the main divide and which had every appearance of being even more abrupt on the opposite side. It was decided to try for it. Upon reaching the top of this promontory, much to the surprise of the party, a lower ledge appeared which could easily be reached and which led back up to the divide again. It also incidentally afforded the best traveling for 25 yards that had been found for some time. Upon reaching the crest of the ridge, however, another bad cliff was encountered and after considerable search it was found this time that the only alternative was to drop over to the almost precipitous north slope of Granite Mountain, above the Granite Glacier. A crevice led out across this steep slope for several rods, then narrowed into a mere crack in the rocks which was only big enough for short toe holds. Here the most dangerous part of the entire trip was encountered; a slip meant a drop of 2,000 feet to the Granite Glacier below. To make it more difficult much of the snow from the recent storm had become melted and then had re-frozen during the night, making the toe holds insecure. It is needless to say that the party moved slowly here and made sure of each new hold before letting go of the old one, and that the climbers at the very first opportunity, worked back to the main ridge which brought them within 150' in elevation of the top. Still Old Granite showed no signs of being conquered for the men soon found that after all their supreme efforts and hardships, the most difficult and hazardous climbing now lay ahead of them. Up they toiled, foot by foot, often finding that they could proceed no further but must climb back and try some other route. In several places Whitham went up over Koch's and Ferguson's back and shoulders to reach an inaccessible hand hold, then the other two were pulled up by the use of the rope. At one point a narrow ledge around the side of a cliff which seemed the only possible route was cut off by a projecting rock which looked at first to be impassable. One of the party finally negotiated it though it involved leaning his body back beyond the center of gravity, feeling for an unseen hand hold on the far side and "bellying" around the point till a foot hold could be obtained on the ledge on the far side. The other two, with no less caution and determination, followed him safely. One member of the party hugged the rocks so closely at this point that he broke the crystal of his hunting case watch but no one breathed even a word about turning back, and at last the party stood on a ledge almost directly under and scarcely 30 feet below the gigantic granite wall of rock which formed the very top of Granite. In fact, a small rock was thrown upon the top.

THE PINNACLE AT LAST! KOCH AND FERGUSON LOOKING OFF FROM THIS HIGHEST PEAK OF THE "SHINING MOUNTAINS"

Still the route continued most difficult and from this point another detour had to be made back to the edge of the north slope before any possibility of an advance could be found. Struggling as only those will who know

(*Continued on page* 447)

ON AND OFF

Queen high. Miss Nell Anderson, said to be the last woman lookout, smiles as she keeps watch over the Gila National Forest in New Mexico.

—Curtis Long

Close beside the High Line Drive in the Rocky Mountain National Park, Colorado, stands this wind twisted lonesome pine, its source of sustenance a mystery as it is rooted in solid rock.

After a long sleep on the Lolo National Forest, Montana, this grizzly bear investigates early spring conditions. He seems quite befuddled.

—G. W. Blaydes

This American sycamore, or buttonwood tree, at Worthington, Indiana, is declared to be the largest known broadleaf tree in the United States. It is 150 feet high and 42 feet in diameter.

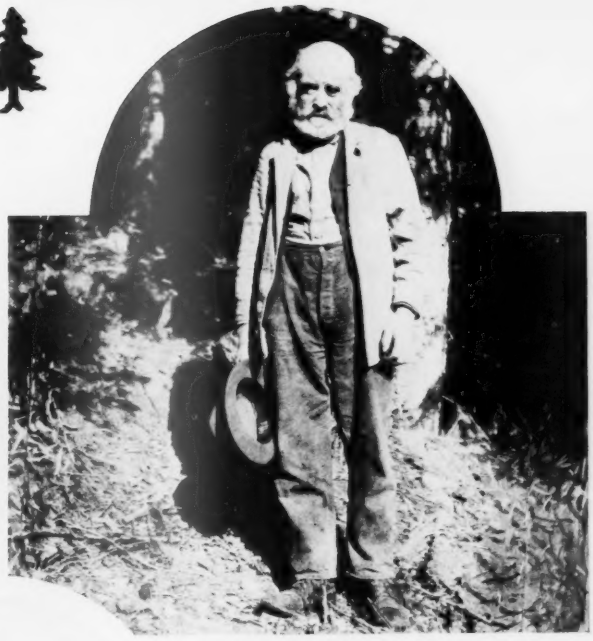
Wings of the Service. A carrier pigeon being released with a message from the summit of South Sister, Deschutes National Forest, Oregon.

The fertility of wood. A great tree fell near Sitka, Alaska, many years ago, but instead of passing on to useless decay has been for years supporting younger trees.

THE TRAIL

—W. H. Bertenshaw

A tree that went to school. This elm on the campus at Syracuse University, New York, apparently has sacrificed all to mathematical aspirations, specializing in rectangles.



—Russell Watson

Jack Post, Oregon frontiersman, and veteran claimant of the proud title of first forest ranger, patrolled the northern Cascade Mountains in 1898.

What ho! Interrupted in his feeding, this huge bull moose dashed into the heavy forest of the Stewart River country, Superior National Forest, Minnesota.

Nature has played a queer prank in Arkansas by joining two distinct species of trees. A short leaf pine clings happily onto a red oak without being greatly disturbed in its growth.

—James Scott

—James R. White

Friendly game. A ranger in the Sequoia National Forest, California, has gained the confidence of a wild grouse by feeding it.

Ship of the desert. This is not motion picture scenery, nor a mirage, but a miniature forest cropping out of the Siuslaw Desert, Oregon.

VETERAN YUCCAS, OR SPANISH BAYONET, WHICH FURNISH THE FINEST FRICTION FIRE WOOD IN THE WORLD

Sparks from Spanish Bayonets

By Edward P. Ancona

IT had been a glorious evening of organized strife, of tests of skill in the ways of the woods and trails, in a word, of Scoutcraft. The twenty Boy Scout troops of the city were holding their annual winter jamboree and the packed stands testified that this city knew scouting and was interested in its boys.

The events had been keenly contested, as well-trained troops, patrols or individuals struggled for supremacy. Knot tying, log chopping, first aid, pyramid building, signaling, woodcraft, races of various sorts, cooking tests and contests in nature lore kept the interest at a high pitch. One troop in the pioneering competition had skillfully constructed a log and brush lean-to, another bridged an imaginary stream, while a third constructed in an amazingly short time a high lookout tower.

But the announcement of the friction fire contest electrified the hundreds of scouts, who in turn keyed up the interest of the spectators. In this event some indefinable quality was present that had been missing in the previous contests. It was an expression of scoutcraft in one of its higher phases or possibly some primitive, dormant sense was being stirred by the thought of drawing fire from cold wood by a method almost as old as time. At one bound the ingenuity of a Swedish genius of a century ago who made the first match, was to be forgotten and the glamour of achievement was to carry one back to the very cave age of man's existence.

"Now, Scouts," the voice of the referee rang out, "here are your instructions. You will line up on the tape, and at the count of 'one' raise your fire set up in your left hand. At 'two' get in position with the hearth on the ground, tinder in place, your spindle, bow and thunder bird set. You will be given ample time to get ready, but at 'three' you are off. The first flame wins the trophy. May the best scout win."

Shouts of encouragement greeted the champions of each troop as they lined up in position. The hubbub quieted, however, at the shrill blast of the referee's whistle, as his hand came down for the first count. To the onlookers the upraised hands of the scouts seemed to contain a meaningless tangle of assorted boards and sticks, but in these trifles a wealth of time, thought and work had been lavished, and each possessor was firmly convinced that his was the world's best friction fire set.

At 'two' the twenty scouts were in a kneeling position, with the left foot firmly planted on a flat board, the hearth, and the knee almost against the left cheek. The left hand clutched the "thunder bird," a small block of wood with a glass percolator top or some similar anti-friction substance set in it, pressed down on an upright stick, called the spindle. This was fitted at the bottom into a shallow slotted hole in the edge of the hearth, where rested the wad of tinder, ready to catch the first sparks generated by the spindle, which was to be rapidly revolved by a sort of bow and thong held in the right hand.

At 'three' the tense row of motionless figures on the arena floor broke into violent action, as they worked feverishly over their bows, striving to call forth the fire god sleeping in the wood fragments of their fire sets. The scout spectators gave vent to their pent-up emotions and their cries of encouragement urged their respective champions on to greater speed.

One champion fire-maker seized his tinder all too soon, as there were no sparks in its inflammable mass, only smoke in the hearth, and was eliminated. Another had a stray spark, but blew too hard, and it fell from the tinder to the floor and expired.

But the next scout was not to be denied, and the encouraging cries of his troop were ringing in his ears as his hearth sent up a dense cloud of smoke, over which he labored at even greater speed. Suddenly casting away his set, the hearth was whisked aside, and he had the mass of tinder held above his face, gently nursing into renewed activity the sparks it contained. His patience bore fruit, for soon the tinder blazed fiercely. The piercing blast of the referee's whistle stopped the action along the line, and the winner was proclaimed. His record-breaking performance had been achieved in fourteen seconds.

True, friction fires have been made in less time; the world's record for Boy Scouts is a trifle over six seconds, possibly better time than has ever been credited to any man, ancient or modern. But when one gets a friction fire in less than a minute it is a stunt not to be sneezed at.

CASTING AWAY HIS HEARTH AND SPINDLE, THE SCOUT NURSES INTO RENEWED ACTIVITY THE SPARKS IN THE TINDER

WITH HIS LEFT HAND CLUTCHING THE "THUNDER BIRD," THE SCOUT MAKES READY TO CALL FORTH THE FIRE GOD SLEEPING IN HIS FIRE SET

If you were to examine the sets used in friction fire contests throughout the country, you would find a large share of them made of Yucca, or Spanish bayonet, also known as the Joshua tree; a light, soft, spongy brown-colored porous wood of a variety which you could not identify, and quite likely one you had never seen before. Scouts everywhere know this wood, at least by name, and know it is the best friction firewood the world produces.

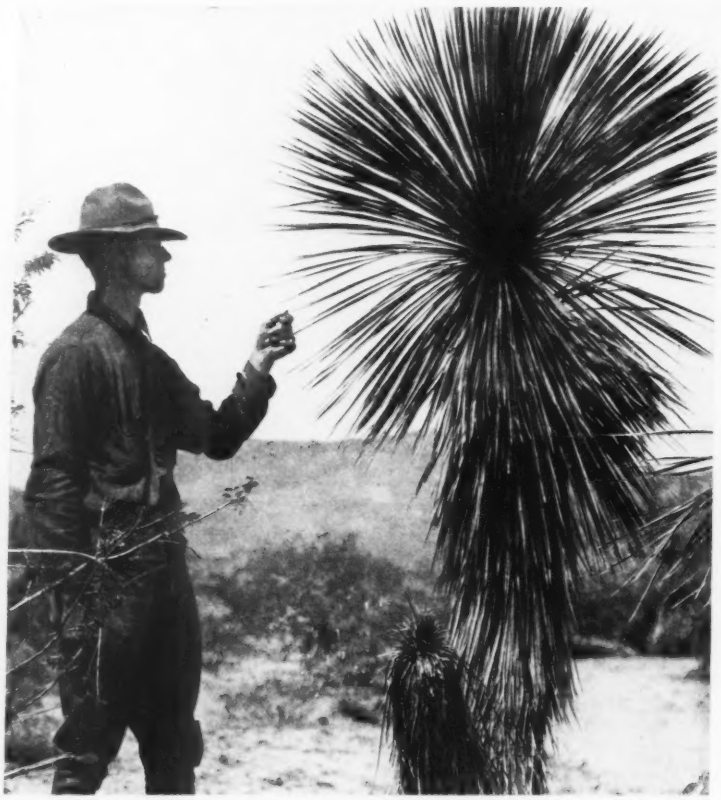
This dwarfed tree, of which there are some thirty known species, grows only in the new world, ranging from Bermuda and the West Indies through the Atlantic and Gulf states; from New Mexico north along the east base of the Rockies to South Dakota; across the border to Arizona and California and down into Mexico and Central America, ranging from a small shrub to a tree thirty or forty feet high.

In spite of its abundance, the wood is difficult to obtain and comparatively costly. No one seems to be in the business of regularly procuring the lumber, which has little or no commercial value. Occasionally a dealer will advertise in a small way that he has yucca for sale.

There are other friction firewoods grown in this country—elms, maples, basswood, almost any wood free from pitch or rosin, but none possesses the quality of this semi-tropical tree, with its long, sharp, bayonet-like leaves. This peculiar quality seems to be its very porous nature, which breaks down readily under high friction, the

powder falling as a glowing ember when the friction reaches a certain speed or pressure.

The yucca is truly a useful citizen in the arid regions of the Southwest, where it grows most abundantly. The natives find more uses for it than do scouts; its root stalks are used for soap, its leaf fibers for ropes. baskets and mats; its seed is gathered by the Indians, ground into meal and baked into edible loaves; its wood fiber is used for packing and its lumber for small articles and boxes; its flower clusters as fodder for cows; the fleshy fruit is even fermented into an alcoholic beverage.



THE YUCCA GROWS ABUNDANTLY IN THE ARID REGIONS OF THE SOUTHWEST, WHERE NATIVES FIND MORE USES FOR IT THAN DO SCOUTS

Strange, too, that a neighbor of the yucca, growing in many cases on the same dry mesas and arroyas, provides a very fine tinder for the friction fire builder. This is the soft, flaky, dry, highly inflammable inside bark of the cedar tree. Scouts find this invaluable, and when used with a yucca fire set the possessor's chances of winning a friction fire contest are greatly increased.

Here the secret of the scout is out; so the next time you go into the wilderness on that hunting trip, try to make a friction fire with the yucca set. You will have an interesting experience, and should you bend, perspiring over the bow, the thunder bird, the spindle, the hearth and the tinder you will link yourself to a long and misty past stretching back to the time when fire was new to man. You will have a bond of interest with the primitive men of Australia, Ceylon South Africa, the Eskimo, of the Red Indians of North and South America. You will be using a set of tools identical to those used by some furclad Eskimo of the dim past, developed from variations of the wood-friction idea in use in many forms throughout the world up to the time he discovered that a bowstring looped in a certain manner about his spindle gave him a fire in less time than his ancestors had been able to make it.

You will also be making fire in the manner in which the ancient Romans for a thousand years rekindled the sacred Vestal fires, when by accident or design the everlasting flame was extinguished.

It is a thrilling sport that links the past with the present generation; a sport, however, that might not come easy to the amateur. Thus, as a safeguard, it might be well to provide yourself with a pocketful of matches or be sure of the championship of a competent boy scout.

The Lure of August

Like the scintillating days of late summer, the August issue of AMERICAN FORESTS AND FOREST LIFE sparkles with the lure of the great outdoors. *"Tramping in the Great Smokies,"* by Laura Thornborough, is the sort of story that awakens the old urge to forsake the gaudy clamor of the busy city for the spell of the cool, fragrant forests. It describes the wild and untamed beauty of the Great Smokies, destined to become our twenty-second National Park. There will be an unusual hunting story by A. D. Sproat, *"Hunting Experiences in Zacatecas,"*—the romance of the chase in the open country of old Mexico, the haunts of the white tail and mule deer, the black bear, and the wild turkey. *"The Return of the Forest,"* by Ben Ames Williams, announced for the July issue, has been deferred for a feature in this number. It is a highly instructive and entertaining human interest story of how the forests of New England are coming back. E. C. Fearnow will tell you how Uncle Sam is *"Keeping Up With the Angler,"* through scientific fish distribution. If you are a fisherman you will want to read this. *"Andy,"* by Erle Kauffman, is a short story of a boy who risks his life in the path of a flaming forest. Every boy will get a thrill by following Andy through his perilous adventures on the fire line. These are only a few of the features in the August number. There are many other articles and short features by popular writers.

DON'T MISS THIS NUMBER!

EDITORIAL

The Chicago Flood Control Conference

WHATEVER else may be said of the Mississippi Flood Control Conference held early this month in Chicago, it unquestionably accomplished what the majority of those present desired it to accomplish. It clearly delineated flood control in the Mississippi Valley as a national problem; it focused public attention upon the situation as one of immediate and impelling urgency, and it laid the problem in all its unsolved complexity upon the doorstep of Congress for prompt and orderly solution.

In thus handling the question, the conference performed a valuable service. Congress cannot now ignore either the form or substance of this forcible expression of public opinion. If it fails to act, the great Mississippi Valley, embracing twenty-seven states, will hold it to account morally and politically. But Congress will not fail to act. The Chicago conference has assured flood control of being the first order of business in the Seventieth Congress.

Three days of oratory, generously punctuated with the stirring music of a many-piece band, the flaunting of banners, and the uproarous applause of a thousand delegates, culminated in a single resolution declaring that the "sole responsibility" for the control of the Mississippi River must be assumed by the Federal Government, and that the time has come for Uncle Sam to attack the flood problem in a "broad and comprehensive way." The resolution further requests the President of the United States, without delaying imperative work that may be begun at once, "to call a conference for the purpose of formulating a comprehensive plan for navigation and permanent flood control, said conference to be composed of army engineers, civil engineers, conservationists, geologists, financiers, agriculturists, and other experts representing the various interests of our country."

There are some who express disappointment that the conference did not go further in its action. We think the conferees were wise in exercising caution in respect to recommendations or commitments. They did not attempt to tell Congress how the problem should be solved, nor were they competent to give this advice. Having demanded that the Government solve the problem, they left its hands free to work out the solution, after exhaustive study of every possible measure of relief by the best engineering and scientific brains in the country. This is as it should be.

In taking this position the conference, in effect, left open to question the forty-year program of the army engineers who have held to the theory that the solution lies in levees and levees only. In its resolution the conference pointed out the contention that the problem cannot be solved by any single remedy, and that levees, spillways and reservoirs should be used in combination where practicable, "together with such additional remedies as may be developed." This recognizes that reforestation and other supplemental measures of relief demand study and investigation. So far as forestry goes, it is now incumbent upon the profession to be prepared to meet the call to supply the President's conference with the best advice and information available bearing upon the question of forests as a factor in flood control.

Maryland's Strange Reasoning

MARYLAND'S recent action in repealing a law of twenty years' standing which gave sanction to the Federal Government, to purchase lands within the state for National Forests should it see fit, is to be regretted as an unwise and unfortunate precedent in state and federal cooperation. The action in itself has the effect of voiding the Government's authority, so far as Maryland is concerned, to carry out the long-established federal policy of forest acquisition as provided by the Weeks Act and the Clarke-McNary Act; it also is a blunt way of saying the principle of Federal cooperation in the creation of public forests does not apply in Maryland and that Maryland will have none of it. If every state should take this view and act accordingly, the Government's program of acquiring National Forests in the East for stream protection and future timber needs would come to a sudden end, because the federal acts mentioned authorize the Government to purchase lands only in states which have given consent through their legislatures.

It is difficult to understand the logic behind Maryland's course. Thus far, the Federal Government has purchased no forest lands in the State; nor has it any lands under consideration for purchase. The State Forester has said there is no room in Maryland for National Forests, that their creation will retard the establishment of state forests and that Maryland wants to be left alone to work out its own forest salvation. Just why, after twenty years, the Weeks Law has become a bugaboo to Maryland—real or fancied—to be scotched summarily, is not apparent. If the State itself were making material progress in the acquisition of State Forests the action might be more readily understandable. But such is not the case.

As a matter of fact, Maryland's progress in the creation of State Forests is lamentably weak. The State was one of the first to inaugurate forestry and it has a splendid record in forest fire protection, nursery and planting practice, educational work and assistance to private woodland owners. But after twenty-five years of forestry it can show only 3,850 acres of State Forests, one half of which were donated to the State by public spirited citizens. According to the State Forester, there are 2,228,000 acres of forest land in Maryland, so that the State's holdings are an infinitely small part of one per cent. We cannot say whether or not there is no room for National Forests in Maryland. It matters little whether they be State or National Forests. The important thing and the thing which will count in meeting future forest needs is a larger acreage of growing timber in public forests.

If as the State Forester asserts, National Forests will retard the State Forest movement in Maryland or any other state, an unhealthy condition of affairs would seem to exist. The task of bringing under forest management more than 100,000,000 acres of cutover lands in the South is too great and the joint responsibility of both state and nation is too pressing to permit rivalry or the ghosts of rivalry, to retard progress. If an agreed program of state and national forest acquisition cannot be worked out for a state, the fault is not with the principle of public forests but with those charged with the responsibility of carrying out the principle.

The American Forestry Association has from the first espoused the principle of the Weeks Act because it recognizes that forestry and stream protection involve important inter-state interests which the Federal Government as the guardian of national welfare must help to protect and to promote.

Maryland's own interests are not excepted. The state is today drawing upon its sister states for over fifty per cent of the wood which it uses and it is accepting money from the Federal Government for cooperative forest fire protection. Its secession, therefore, from the Weeks Law policy and its expressed desire to be let alone in working out its forest problems seem at best ill-timed and illogical.

We do not question Maryland's right to enact any legislation which it sees fit but when it does repeal a law to no apparent good purpose, and thus sets a precedent for uniformed legislatures to write dead letters into a Federal Act constituting a cornerstone of our national forest policy, we think some clear and logical explanation is called for.

A Three State Victory

THE legislatures of Delaware, Florida and South Carolina have within the past month passed legislation creating forest commissions and providing for state foresters. Here is increasing evidence of the recognition of forestry as a needful activity of the individual state. Forty-two out of the forty-eight states of the Union have now written forestry into their laws. The six which have failed to provide for forestry departments or divisions are Arizona, Arkansas, Nevada, New Mexico, Utah and Wyoming.

The action of Delaware, Florida and South Carolina in creating forestry commissions, however, has not come without untiring effort on the part of those who have the forest welfare of these states at heart. Florida in particular has been long in coming to a recognition of the need and importance of state forestry. The first forestry bill was introduced in the Florida legislature more than ten years ago. Undaunted by repeated defeat, the Florida Forestry Association and a number of other organizations and individuals have worked unceasingly to bring about state recognition of the economic need of maintaining the forest resources of the State. During the past spring the American Forestry Association kept a representative in Florida helping to create public sentiment in behalf of the measure which finally passed.

The new Florida law creates a forestry commission which is authorized to employ a trained forester. An appropriation of $25,000 to finance the work for two years is provided. The law further provides the basis of cooperation with timberland owners and the Federal Government in fire protection and reforestation. Florida is thus placed in a position to begin in the large and urgent task of working out her forest destiny. A tremendous educational task is before her, and her progress will depend primarily upon the extent to which the people of the state may be educated to the need of forestry as a vital factor in local development and welfare.

It is unfortunate that in South Carolina the legislature in providing for a forestry commission and a state forester failed to appropriate money to initiate the work. The law, therefore, will be operative only in the event the necessary funds can be raised by public subscription. This is unsatisfactory, and it is to be hoped that the next legislature will make adequate appropriations. Here, as in Florida, widespread education among the people is essential to permanent state forestry.

Wood and Dollars Saved by Creosote

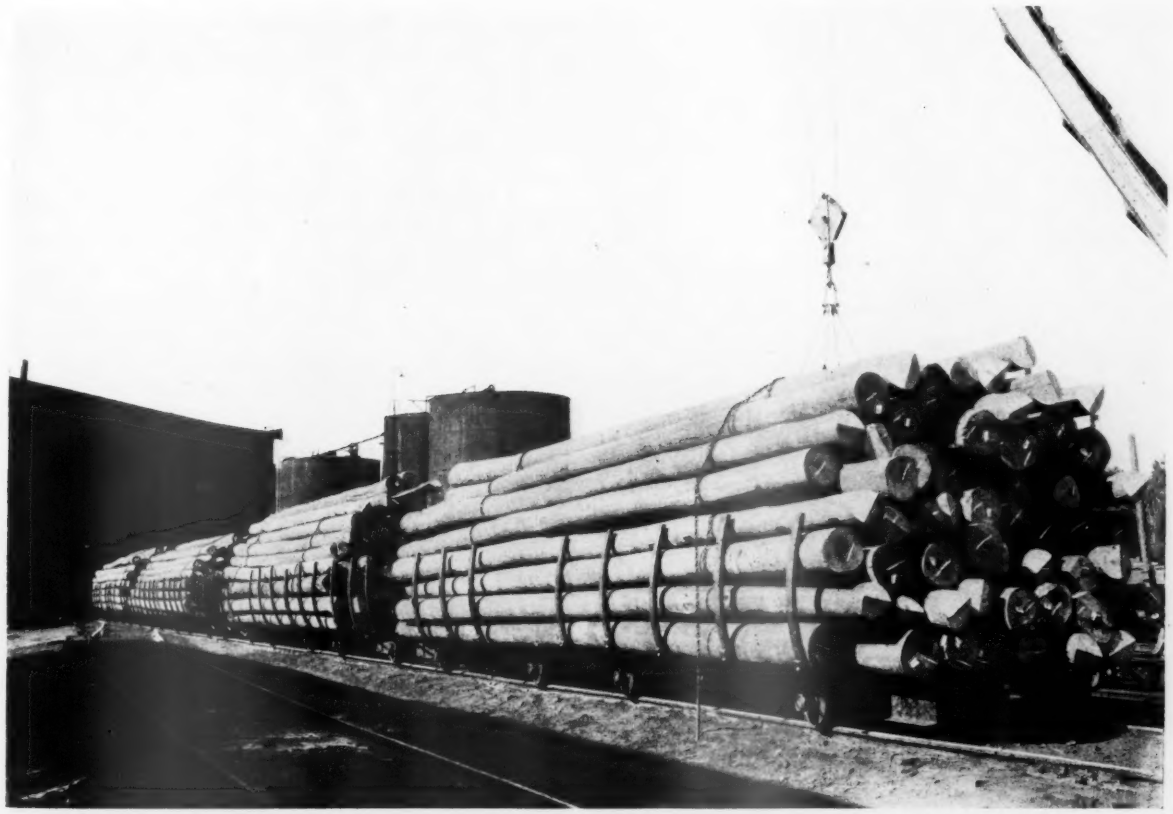
A Demonstration of the Two-Fold Value of Intelligent Forest Utilization

"The fundamental idea of forestry is the perpetuation of forests by use."—THEODORE ROOSEVELT.

To Roosevelt, one of the pioneers in the conservation movement, forestry and forest conservation were synonymous. There is today a popular saying that a tree saved is a tree grown. The economic test of the truth of this epigram is to so utilize one tree that it will give the service formerly requiring two or more. Here is a notable illustration. The information given in the article was furnished by the Engineering Department of the Bell Telephone Company.

SOME years before Roosevelt had epigrammatically stated the underlying idea of forestry as being the perpetuation of forests by use, the General Staff engineers of the Bell Telephone System had begun experimenting with the use of wood preservatives as a possible means of lengthening the life of their telephone poles. Operating a network of communication facilities which even then was beginning to assume nation-wide proportions, it was a large user of forest products, particularly for poles and crossarms.

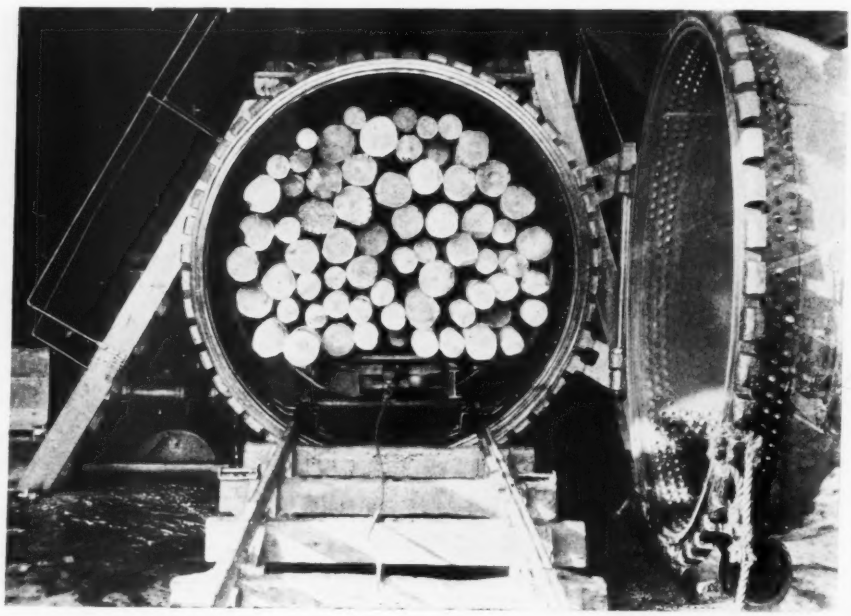
The use of creosoted yellow pine poles was begun as early as 1897. Within a few years several lines of poles of this type had been installed as part of the regular long distance plant, over which service was being given daily. But since the use of creosoted poles was in



THE PRESERVATIVE TREATMENT OF TELEPHONE POLES, BEGUN EXPERIMENTALLY ALMOST THIRTY YEARS AGO, HAS BECOME THE ESTABLISHED POLICY OF THE BELL TELEPHONE COMPANY. THIS POLICY HAS SOUND BUSINESS AND GOOD CONSERVATION TO RECOMMEND IT. THE COMPANY'S REQUIREMENTS RANGE FROM 600,000 TO 700,000 POLES ANNUALLY AND NINETY PER CENT OF THEM ARE TREATED WITH CREOSOTE BEFORE BEING USED. THE CHARGE OF SOUTHERN PINE POLES SHOWN IN THIS PHOTOGRAPH IS READY TO BE RUN INTO THE TREATING CYLINDER FOR PRESSURE TREATMENT WITH COAL TAR CREOSOTE

the nature of an experiment, arrangements were made for periodic inspections of which detailed records have been kept. The results attained have an indirect bearing upon the broad problem of forest conservation, in which the American people are rightly showing increased interest year by year.

One of these early lines of creosoted pine poles, built in the summer and early fall of 1899, extends from Montgomery, Alabama, to New Orleans, Louisiana. This line is of particular interest, not merely because of the length of time during which it has been in service, but because climatic and soil conditions afford a peculiarly convincing test of the effectiveness of the method of preservation used. Bell System engineers have found, by experience, that lines in service in the Southern states, where the air is warm and moist, are much more subject to pole decay than in cooler and drier localities.



THE CARS, LOADED WITH POLES, ARE RUN DIRECTLY INTO THE CYLINDERS AND LEFT UNTIL THE TREATMENT IS COMPLETED. THIS CYLINDER IS NINE FEET SIX INCHES IN DIAMETER AND ONE HUNDRED AND SIXTY-FIVE FEET LONG

The section of line under consideration runs from Hurricane, a few miles northeast of Mobile, Alabama, to the city of New Orleans. In its construction, creosoted yellow pine poles and braces to the number of 7,644 were used. The specifications under which the line was built called for sound, straight-grained, yellow pine poles, free from large, decayed, or loose knots. Over 80 per cent of the poles were 20 or 25 feet in length. The length of the remaining pieces ranged from 30 to 80 feet. A large majority were old growth longleaf; a few pieces came from "old field" stands, either of young longleaf pine, or related species native to the section. These pieces showed the higher rate of growth characteristic to their type, while the timber from the virgin longleaf forests had the dense narrow ringed form of structure normally characteristic of the longleaf species.

Soil conditions along the line are varied. From Hurricane to just north of Mobile, the line crosses a broad stretch of swamp land cut by the numerous rivers which empty into Mobile Bay. The swamp level is low, and during part of the year the pole settings are usually covered by several feet of water. Vegetation grows rankly in the muck soil of this marsh and frequent trimmings are necessary to keep it from growing into the line wires. When it reaches the higher ground, just north of the Mobile city limits, the line takes a generally southwest direction towards Pascagoula and runs through a rolling country drained by many small streams. Except for occasional settings in small bogs or marshes, the soil is of a sandy loam type which drains relatively quickly. From Pascagoula to west of Bay Saint Louis, the pole settings are mostly in a sandy clay subsoil overlaid with a somewhat loamy sand top soil. Beginning a few miles from Bay Saint Louis the line runs for many miles through low swamps where pole settings are in muck soil which frequently requires the use of special fixtures to keep the poles from sinking.

The four elements necessary for decay of timber are air, moisture, a suitable temperature and food upon which the fungus may feed. The last, of course, is furnished by the timber itself. Of the soils in which the poles of this line are set, only the marshy muck soils possess any characteristics which would retard the decay of timber, and even in the case of these soils, the characteristic is present only during part of the year. The retarding power of the marshy soil is not inherent to the soil itself, but is due to the marshes being covered with water at certain periods of the year which stops, for a time, the activity of the decay-producing fungus through the elimination of air from the part of the pole most subject to decay: viz., that part just at or just below the ground surface. As a result, inspections up to the present time have shown somewhat fewer cases of ground line decay in the marsh areas than in the locations classed as high.

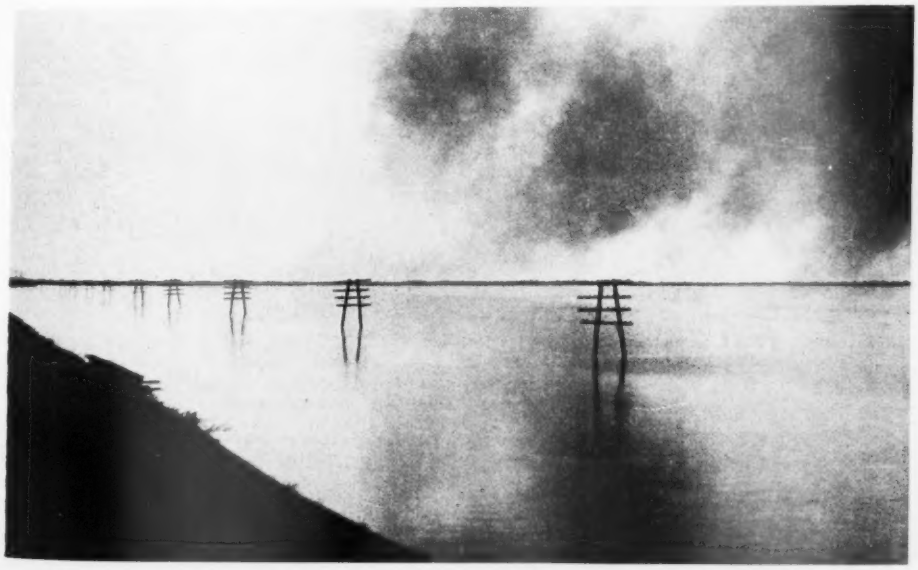
Throughout the entire area traversed by the line, there

is almost a certainty that moisture conditions throughout the year will favor the growth of fungus. No wonder that pole line engineers have united in agreeing that the Montgomery - New Orleans line is an exposure highly favorable to decay and that the long continued service of the creosoted pine poles in this area represent a successful resistance to conditions which would have quickly eliminated from service any pole line which had not received preservative treatment.

A PIONEER POLE LINE—THIS IS THE OLD NEW ORLEANS - MONTGOMERY TOLL LINE PASSING THROUGH THE SALT MARSH EAST OF NEW ORLEANS. AFTER MORE THAN TWENTY-FIVE YEARS, ONLY 13.5 PER CENT OF THESE CREOSOTED POLES WERE REMOVED BECAUSE OF DECAY

The poles were required to be impregnated by the cylinder pressure process with not less than 12 pounds of creosote per cubic foot of timber. In this process, the poles are assembled in a horizontal position on suitably sized "buggies" which are then run into the cylinder; the cylinder is closed and steam applied for a number of hours, in order to bring comparatively green wood into a condition where it will more readily absorb the preservative. A vacuum treatment follows the steaming to remove some of the water taken up by the poles. Following the application of the vacuum, hot creosote is run in to fill the cylinder and pressure is then applied to force the creosote into the wood. The cubical content of the timber is measured before it is placed in the cylinder and the pressure is kept up until sufficient preservative has been forced into the timber to ensure the retention of the required amount when pressure is released and the creosote drawn off.

From the time that the line was constructed attention was frequently given to ascertaining whether the poles were justifying the expectations which led to their employment. In 1906, for example, representative sections of the line were covered and a total of 2,152 poles were inspected for condition. One per cent of these poles were found sufficiently deteriorated to warrant replacement, 9 per cent more were noticeably affected by decay and the remaining 90 per cent were sound and in good condition.



SOME OF THE ORIGINAL POLES IN THE OLD TOLL LINE STILL STANDING IN LAKE CATHERINE, LOUISIANA. THEY HAVE WITHSTOOD BOTH DECAY AND STORM DAMAGE

Some years later it was concluded that the best way of determining the performance of the poles would consist in establishing

IN THE SOUTH POLES ARE MORE SUBJECT TO DECAY THAN IN THE COOLER, DRIER LOCALITIES AND THIS SHOWS THE MUD-SILL CONSTRUCTION NECESSARY IN SOME WET SECTIONS TO KEEP THE POLES FROM SINKING

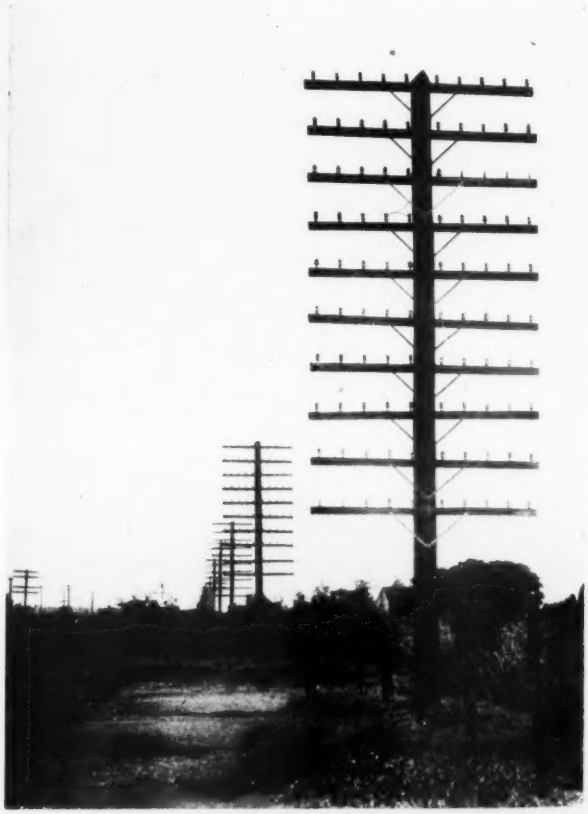
regular test sections representing varying conditions along the route followed by the line and inspecting the same poles at intervals of a few years and observing in considerable detail the nature and extent of the changes which occurred in their condition. The test sections were selected and first inspected in the year 1915. At that time, after 16 years of service, 333 poles, 4.4 per cent of the original 7,644 pieces of creosoted pine installed, had been replaced. The following table gives the causes which led to the removal of these 333 poles:

Cause of Reconstruction	*Per Cent of Total*
Highway or railroad construction, rerouting of line, etc.	1.65
Damage by storm or accident	1.27
Decay	0.29
Damage by fire	0.14
For analysis of preservative	0.01
Cause unknown	0.99
Totals	4.35

Probably a portion of the poles listed as removed for unknown causes were removed because of damage by decay, as the earlier detailed inspections indicated a somewhat greater proportion of serious damage by decay than the .3 per cent shown in this table of removals.

The test sections established in 1915 were 9 in number and contained, when the line was built, 1,611 creosoted pieces in the form of poles, braces or stubs which is approximately 20 per cent of the number of creosoted pieces originally installed. About 40 of these pieces had been removed before the test sections were established, 9 of these pieces—a little over .5 per cent of the original number installed—had been removed on account of damage by decay.

In 1915, about 5 per cent of the original pieces in place including the pieces already removed from the line, were found to have decayed to the point where removal or some other form of reconstruction was desirable. About 33 per cent had up to that time developed some amount of deterioration through decay or analogous forms of damage.



A HEAVILY LOADED LINE OF PRESSURE CREOSOTED PINE POLES. THE REDUCTION OF POLE REQUIREMENT THROUGH PRESERVATIVE TREATMENT HAS PROVEN A SAVING OF BOTH WOOD AND DOLLARS TO THE COMPANY

As already noted, the creosoted section of the Montgomery-New Orleans line crosses the low lying marshes at the head of Mobile Bay and a still longer stretch of low lying marshes between Bay Saint Louis and New Orleans. In both of these stretches the line is exposed

(*Continued on page* 429)

The Pine Tree Farm

By Mary S. Hitchcock

"COME on, slow poke; come to your supper," called Jane Newcome, laughingly, to her twin brother Jim. The boy was strong and tall, straight and sixteen, with sandy hair and blue eyes, freckled cheeks and sensitive, smiling lips. And he grinned and shouted back:

"I'll beat you to the house and give you all the start you have."

She was several rods down the slope nearer the buildings, while he was on the very crest of the ridge setting out little pine trees. Away went Jane like the wind, but faster came Jim. He ran by, then stopped and waited, and, pulling her arm through his, they went along the path, talking busily.

"You said that you hadn't noticed anything," said Jane.

"I know it," returned her brother, "but since then I have been thinking. I do not remember hearing father laugh once or make the least bit of a joke as he does when we are working hard since he heard of Mr. Blaisdell's death. Even though they were such good friends, there is something besides that"—and the boy broke off, puzzled.

Jane stopped short and exclaimed: "And mother cried."

"Mother cried! Why, I never knew mother to cry; when?" demanded Jim.

"Why, when I started for the village yesterday I went back to get my gloves, and mother was watching father out of the sitting room window, and I am sure she was crying. I went to her and asked what was wrong.

"'Nothing at all, my dear; run along, for your father is waiting.'

"Then she said: 'Why don't you hurry?' So I went out and thought I was mistaken."

"Well, I bet you were not. I believe it's because we have to leave this place."

Just then Mrs. Newcome called: "Come to supper, children," and, turning to her husband, said: "I declare, since Jane bobbed her hair, those two look more alike than ever."

Mr. and Mrs. Newcombe had come to live on the beautiful Blaisdell homestead when they were first married, eighteen years ago. Grant Blaisdell, the owner, would not sell the place. It had been his father's and grandfather's, and he said that he meant to pass his old age there. But he had died suddenly in South Africa a month before, and his son Ralph had decided to stay there and had written that when he became of age in the fall the farm would be sold.

That night Jim asked a question or two, and his father explained: "We have always had a good chance here, and if I had not lent your Uncle Albert that money, which he is in no shape now to pay back, I could buy the place. I could raise what extra I would need on a mortgage, and the timber on the place will some time be worth something. Mr. Blaisdell and I both believed in reforesting; and he turned back most of the rent for that purpose.

"Everyone thought I was throwing away my time when I thinned out that second growth pine grove the first year I was here and set out the smaller trees on the hill, and they were *sure* of it when we began to *buy* trees for planting. But they will do good for some one if not for him or me."

In August, Mr. Newcome wrote to Ralph Blaisdell and asked him to sell the farm on time. He replied that he was sorry, but he must have the money down, but that he would give them until the first of October to raise it. It was then the middle of September, and Mr. Newcome went over into the next county to see if his brother couldn't get the money for him. This was impossible, and his brother advised him not to buy so high-priced a farm.

Mr. Newcome returned home sick with disappoint-

ment, but by morning his wife knew it was something worse, and that he was really ill. When the doctor came he confirmed this and pronounced it a severe case of typhoid fever.

Mrs. Newcome, who had been a trained nurse before her marriage, took charge of the situation and nursed her husband faithfully night and day, while Jim and Jane, assisted by the best neighbors in the world, did the farm work. When he realized his condition, Mr. Newcome told his wife to write Ralph Blaisdell of his illness and ask him to extend the time.

The first of October had come and gone before the crisis was passed. Then Mr. Newcome began to mend very slowly. One day when the doctor came he showed Mrs. Newcome a paper. "Your husband must not see that," he said, pointing to a big advertisement, "or he might have a bad relapse, from which he would hardly recover."

The advertisement was for the sale of Blaisdell Farm, under the supervision of Cross & Bedell, a firm of lawyers at the county seat.

In less than a week possible purchasers began to come to look the farm over, but were not allowed in the house on account of Mr. Newcome. Jim answered their questions respectfully, if they found him, but he generally managed to keep out of the way. As Mr. Newcome began to improve he wondered why they didn't hear from Ralph.

"Are you sure he has not written?" he asked his wife.

"Yes, I am sure that he hasn't," she would answer.

Finally, one day, when he had become strong enough to sit up, he saw a strange man drive his car into the yard.

"Who is that?" he asked.

"I do not know," she answered, and was thankful that he did not ask the man's business; but her heart sank when she realized that she could not keep the state of affairs from him much longer.

After Fire - - -

HERE ONCE THE ROSE

Here once the rose
In splendor laid
Her slender beauty, yellow sprayed.

Here once the dew
In morning fell
Upon the hidden lily bell.

And here the thrush
With silver throat
Did loosen every Spring his note
And the bright robin showed his coat.

No more, no more,
Shall rose and thrush
Make sweet with sight and sound the bush,
Nor robins break
The endless hush.

—Mabel Simpson, reprinted by courteous permission of The Dial.

The next morning the doctor said he thought she should tell him. It would be a hard blow, but he thought Mr. Newcome could stand it now.

Then, that very day, a pleasant, prosperous looking man came and examined the entire place very carefully. Jim said he looked like a confidence man, and Jane agreed, but they were not good judges, for he seemed too much interested and in earnest to suit them.

Jim kept out of his way, but just before he left he came out to where Jim was turning the cows into the yard, and said:

"I like this farm pretty well, and if my brother likes it as well, we will buy it. I'll bring him over tomorrow afternoon. "Say," he questioned, "that lawyer told me that that valley of pines all belonged on this farm. Is that true?"

"Yes, sir," returned Jim, and turned away with a lump in his throat. His father's beloved pines! Then he stopped to hear what the man was saying.

The man wasn't speaking to Jim—just seemed to be assuring himself of a certain fact. But just then he made the mistake of his life in talking aloud to himself, for he ruined his own purchase of the farm. With laggard feet and a heavy heart Jim turned the cows into the yard, but right in the middle of milking a wonderful idea popped into his head. He did his work in double-quick time, and the minute he was through went over the ridge with flying feet and a heart beating like a sledgehammer; he didn't get back until pitch dark.

"Where on earth have you been," asked Jane, as he came in, but just then she caught sight of his face in the light of the lamp.

"Oh, Jim, what is it?" she cried.

He was white and dripping with perspiration, and his eyes were shining with excitement. He caught hold of her hand and dragged her out into the yard. He was trembling, and his voice was hoarse as he answered her.

"Oh Jane, Jane; I believe there is a way to keep the farm."

"How? What do you mean?" Her excitement was mounting to meet his. "Tell me quick."

They talked and talked until their mother called them, and then the boy said: "Don't let's tell them; no use raising false hopes; but they won't be false, I'll *make* them come true," he added with determination.

"This is our last throw, Jane. Pray that the ball goes over the line," said the boy, unsteadily. His sister put out her hand and touched his, and whispered: "Let's pray about it together, Jim." Instantly they dropped on their knees in front of the old bench they had been sitting on.

Mrs. Newcome, looking out, saw them in the lamplight from the kitchen window. "The blessed children," she murmured, "they are saying their prayers together as they did when they were little."

The youngsters were up long before sunrise the next morning and Jim, dressed in his best and looking grown up and manly, was off for town right after breakfast.

He came back two hours later with Mr. Carey, the banker, and Mr. Gray, a lumber dealer, with him.

"All right, old girl," he called to Jane, who had run out on the porch; then he went with the two gentlemen over the ridge.

When they came back they called Mrs. Newcome out, and after a few minutes they all went in to see Mr. Newcome.

Jane waited, impatiently; then Jim came down with the two men and went away with them.

The girl caught hold of her mother as she stood in the door. "Oh, mother, tell me all about it; I can't wait another minute."

"Dear child, why didn't you come up and hear it all? You never saw anyone as happy as your father, unless it is Jim. We are going to buy the farm. Mr. Carey is going to let us have what money we need to pay for it. He told your father: 'I would let you have more than you need, with that grove of pines on the place. You were providing liberally for your old age when you planted them, Mr. Newcome.'"

That afternoon Jim took his mother to the county seat and she arranged for the purchase of the farm. That evening, when the family were talking over the events of the day, Jim told him about his great idea.

"After I heard what that man said, I went up and looked over the second growth pines. There are more than a hundred between three and four feet around, and the whole valley is in first-class condition. But it was Jane who thought of going to Mr. Gray to find out what they were worth. When I told him about it and what I wanted to do, he very kindly went with me to Mr. Carey and told him he was ready to buy all the salable pine, and they both came home with me, and you all know the rest."

"Not quite, my boy," said Mr. Newcome. "What did the man say last night that made you think of the pines? Everyone has laughed and guyed us so much about that plantation of trees we haven't fully appreciated their value.

"Why," Jim answered, "just as he climbed into his car, he said: 'If those pines are properly taken care of and cut, they will pay for this farm in ten years.'"

Wood and Dollars Saved by Creosote

(*Continued from page* 426)

to the effects of the hurricane type of storm which almost every year sweeps across some parts of the Gulf of Mexico and causes great damage to the surrounding land areas. Within two years after the establishment of the test sections, both of these swamp areas had suffered severely from such storms. The great hurricane of 1915, which cut New Orleans off from the rest of the country for several days, swept ships and sections of the track of the neighboring railroad against the line in the marshes east of New Orleans and washed out and tore away many poles and carried them with the attached wires for considerable distances.

By the time of the next inspection in 1921, about 8.5 per cent of the poles had deteriorated to an extent necessitating reconstruction. This includes the 5 per cent found at this stage up to the earlier part of 1915. However, on account of the storm damage and of the gradually increasing necessity for removing poles because of inadequate height for the changing right-of-way conditions, the total number removed for causes other than decay had reached somewhat over 250 out of the slightly over 1,600 poles originally installed.

By 1925, removals for causes other than decay had risen to about 480, while the removals necessitated by decay damage had grown to about 13.5 per cent.

A little over 900 of the original poles, or about 57 per cent of the number originally installed, still remain in service today. The increasing demands for telephone service arising from the rapid growth of the communities served by the line will, however, probably result in material decreases in the number left standing after another five years. In consequence, many poles with prospects of serving satisfactorily for five, ten, fifteen or even twenty more years as far as any deterioration of the timber is concerned, will have to be discarded because of the necessity for adequately caring for service.

In 1925, when necessary pole removals were made to permit the installation of taller pieces suitable for carrying greater numbers of wires, advantage was taken of the opportunity for securing suitable specimens and determining by mechanical test whether the timber had undergone any material change in strength in the course of its long exposure to sun, rain, and other weather conditions. Seventy-three poles were secured for these tests;

thirty were left in their original settings to be tested as they stood and forty-three were removed and taken to a nearby point where the year before convenient arrangements of posts and timbers for gripping the butt sections of poles and for applying mechanical load at the top had been established for the purpose of determining the strength of new pole timber. Of the thirty poles tested in the line, only fourteen broke under stress, the remaining sixteen being strong enough to break down the earth setting and pull out when strain was applied. These sixteen were taken to the testing point and broken along with the forty-three previously assembled there. The making of these tests resulted in demonstrating that little, if any, change in the strength characteristics of the timber had occurred as a result of twenty-seven years' exposure. This conclusion has to be based upon what is known of the strength of new creosoted timber of similar character produced today, as no similar strength tests were made upon the original timber used in the construction of the line.

At the present time, fully 90 per cent of the poles being placed in the system are receiving preservative treatment of one kind or another, and the annual requirements for new construction and replacements run from 600,000 to 700,000 poles.

The rapid advance in the use of creosoted poles may be said to have been one of the indirect results of the experimentation carried on by the Bell System engineers nearly three decades ago, coupled with an established policy of sharing with others the results of its efforts along lines in which it has been possible, on account of mutual interest, to cooperate for the common good.

Street and Roadside Trees

(*Continued from page* 407)

makes a handsome tree, but is too brittle and short lived. The several species of European lindens, the London plane, *Platanus acerifolia*, usually known as Oriental plane; the Scotch elm, *Ulmus Glabra* and the Huntingdon elm, *Ulmus hollandica vegeta*, are all trees that add much to our tree possibilities, as all are handsome and can be grown over much of our country. Two more recently introduced valuable trees are *Koelreuteria paniculata* and the Chinese elm, *Ulmus pumila*. The last seems especially well adapted to the region from the 98th meridian to the Rocky Mountains, where good trees are scarce.

Most native trees both large and small may be used appropriately in naturalistic planting along our roads. Fortunately this is the most appropriate type in the vast majority of situations. New England has recognized this by beginning her roadside beautification through protecting native growths and later supplementing these when necessary by additional planting. In such a system most of the plants will be those adapted to the particular location, but judgment must be used in removing the least attractive and reducing the number of any particularly lusty individuals that may be usurping more than their share of room. Even more ruthless measures must occasionally be taken and almost all the growth cut to keep open desirable views or protect the interests of the users of the road. Several other states have made beginnings along the same lines; but because of the richness of her native growths, and because she has been protecting them for a number of years, New England is farther along.

Divided road jurisdiction is sometimes a handicap, but whole-hearted cooperation and an effort at mutual understanding are the foundations upon which the desired ends will ultimately be built.

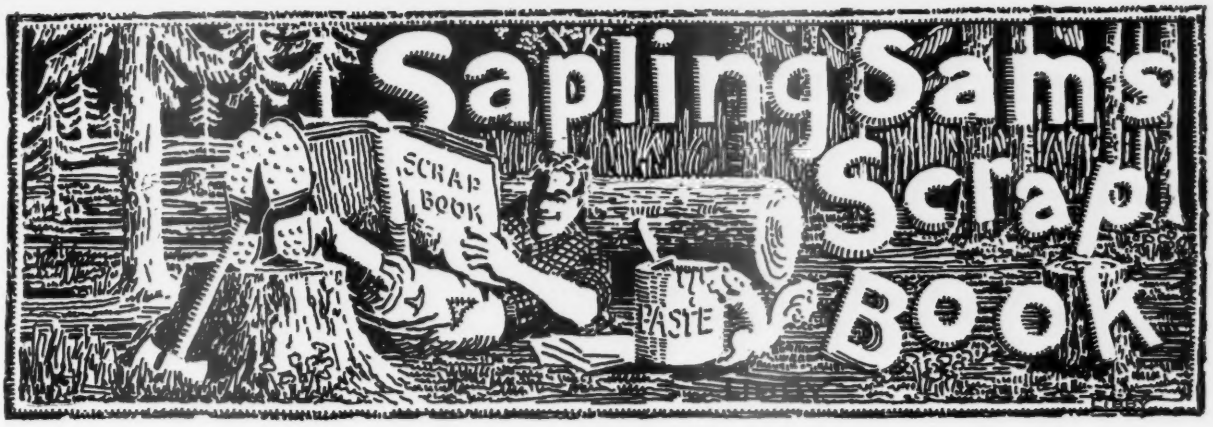
Endowment Fund Grows

AUGMENTED by a score or more of contributions during the past month, the Associations's Endowment Fund on June 15 had reached approximately $220,000. Six hundred members of the Association have thus far contributed to the fund and subscriptions continue to be received.

At a recent meeting of the Directors of the Association the need of building the Endowment Fund, now that it has been successfully established, was emphasized in order that the Association may constantly broaden and enlarge its work. When the original call for contributions early in March was made, many members of the Association were away from their homes, and therefore failed to receive the announcement. Other members who failed to act promptly but who desire to be represented in the permanent record of the Association's Endowment have asked if it is too late to make subscriptions. In order, therefore, that all members who have not yet subscribed may have an opportunity to do so, the Fund will continue to remain open to donations.

Those who have subscribed up to June 15, in addition to the list published in the May and June issues of the magazine, are given below:

J. E. Aldred, Edward Severin Clark, Finch, Pruyn and Company, Wait Talcott, Miss Helen E. Chase, Mrs. Charles H. Ainsworth, Pacific Marine Supply Company, Charles Weston Ten Eick, William Thum, Clement S. Houghton, Miss Aurelia S. Harwood, Paul F. Johnston, A. H. Vorum, Mrs. Richard Rossmassler, Mrs. David S. Smith, Frank A. Merrill, Mrs. Charles H. Pratt, Mrs. A. B. Coxe, George Oliver Carpenter, Jr., Mrs. Frederic Cunningham, Ray T. Gile, Charles A. Kutzleb, Luke D. Doyle, F. G. Miller, Mrs. A. H. Harlow, F. G. Fricke, Mrs. John Markoe, Major George P. Ahern, Inex Mexia, Mrs. Herbert S. Greims, Jacob Knup, J. S. Bradford, Mrs. W. Phillips, E. Stiles Ely, Mrs. L. H. Wallace, Colonel Joseph Hyde Pratt, J. G. Turner, Richard E. Edwards.



Round River Yarns

II. FISHIN' ON THE ROUND RIVER

By Roland Henrionnet

About a week after the old camp watchman had told me the yarn of the cook and himself killing the two horses while shining deer, I stopped in again. He was busy this time carrying in wood but in a few minutes he had finished and took his accustomed place on the bed, filled his pipe and smiled.

"Back after the rest of thot yarn?"

"Yes," I told him. "I've been wondering how you got the cook out of that horse deal."

"Right ye are. Wall, I didn't eat any of thot hoss meat meself. Siveral times whin I wuz eatin' I'd look up an catch the boss's eye on me an thin I'd think of thot check thot war coming in the spring an the price of a good hoss out of it an' I jist couldn't eat that thar hoss meat. I war gettin' mighty hungry fur meat too.

"Wall, along in February it begin to snow sumthin' orful. We war workin' on that thar wanegan an didn't have much of a trail from the camps to the wanegan. Jist a ways off wuz a big holler log. I've heerd it wuz a pipestem thot Paul Bunyan lost the winter of the big snows. They say thot Paul always smoked a straight stem pipe. The snow got so deep thot we couldn't git through without shovelin' a path. We shoveled a path from the cook shanty to the holler log and walked through the log an thin shoveled a path from the log to the wanegan. It snowed so much thot winter thot the snow wuz ten feet deep an jist covered the holler log.

"Sez I, 'Git a team of hosses, quick'!"

"Wall, one mornin' as I wuz goin' toward the cook shanty from the wanegan, I had gotten half way through the holler log whin I see the cook comin' from the other end an wavin' the butcher knife and lookin' like a bloomin' crazy man.

"Sez I to meself, 'Here's whar thot cook gits even with me over thot hoss deal.'

"Jist thin I sees a big knothole in the top of the log an' through it I goes.

"Wall, the cook looks kind of sheepish like whin I wint in to git the water pails but sez nothing. I wint down to the river. We had two big holes cut in the ice, one to water the hosses an' one to git water fer the cook. I wuz jist goin' to dip down fer a pail of water whin I sees sumthin' at the furst hole thot looks like a big fish head. I runs back to the blacksmith shop an' gits a long two inch cable, made a slip-noose and runs back to the second water hole. In about a jiffy a big head wint into the noose an' I runs to a big white pine and snubs the cable. I sees the barn-boss coming an' I sez to him.

"Sez I, 'Git a team of hosses quick an' hitch on to this yere cable. I got a fish on it.'

"Sez he, 'I'll have a team thar right away.'

"We hitched the team to the cable but they couldn't budge it. Wall, sir, we had to hitch eight teams onto thot thar cable before we got thot fish out. An' man! Talk about a tickled cook. Say! Thot thar fish fed the crew of eighty men fur two months.

"Sez I to the cook, 'Ye won't need to feed hoss meat now.'

"Sez he to me, 'Yu bane one gud bull-cook.'

"An' he took the butcher knife from his belt an' put it with the rest of the knives in a drawer.

"One day a party of cruisers comes into the cook shanty. They ware goin' to estimate the timber around thot part of the country but hadn't been able to locate one of thim thar section corners. The second day they comes back about dark and mighty tired. I heerd thim say thot section corner hadn't been found yit.

"The cook, sez he, 'Yu bane tank yu so gud a lumberjack, why don't yu find thot section corner for thim cruisers.'

"Sez I to the cook, 'Thim remarks are derogatory. I've no doubt I can find thot section corner.'

"I takes me lantern an' starts out an' sure enuff in about an hour I finds the section corner. I pulls it up and carries it under me arm to the cook shanty.

"The cook war standing near the stove talking to thim thar cruisers so I walks right in, throws the section corner down at the cruisers feet an sez; to the cruiser, "sez I, 'Thar is yer domned section corner.' I seez the cook's mouth fly open but I didn't say a word; jist walks out like thot war me regular work. Whin the ice broke up thot spring we launched the wanegan an' started down the river behind the drive. Thot war the spring I won the log rollin' champeenship of Round River——" "Well, I'll be in again to hear about that." I interrupted the old watchman,—"I've got to be pushing along now."

(To be continued)

Do Forests Prevent Floods?

(Continued from page 392)

longer, conditions have grown up, land settled, villages and towns established which depend entirely for their protection during ordinary times upon the levees. Moreover, they are essential to the sanitation and healthfulness of adjoining lands. Although by themselves, levees are not a cure against floods, they must play an important part in any comprehensive plan of flood control.

The idea of regulation of the water flow by means of storage is a very old one. This method has been utilized in Europe for centuries. In France and Germany, the construction of dams for water regulation dates back to the seventeenth and even the sixteenth century on such rivers as the Loire, the Elbe, the Ruhr and others. In this country this method of controlling water by means of storage has already started. The detention basin plan as a solution of the flood problem in the Miami Valley in Ohio has now been carried out. Five detention basins covering a total area of 35,650 acres, or 1.5 per cent of the total area of the drainage basin above Hamilton, Ohio, were constructed and are considered effective in caring for any flood waters that may occur. Still, the construction of reservoirs alone to impound flood waters may require such enormous areas for storage purposes as to make it impossible always to find satisfactory sites. Furthermore, the reservoirs are subject to filling with silt and becoming in time ineffective.

Forests at the headwaters of the rivers alone, as has already been shown, will not prevent floods or regulate the flow of water in our great rivers.

Each measure depends upon the others. River improvements, including the building of levees and the straightening and deepening of channels, are dependent upon storage reservoirs to maintain a steady flow and to decrease the amount of construction. Storage reservoirs, on the other hand, are dependent upon river improvements to reduce their size. Both are dependent upon a forest cover at the headwaters to check surface run-off and to prevent erosion, with consequent formation of bars, narrowing the channels and silting up of reservoirs.

The value of engineering methods of control depends on how thoroughly the headwaters of the rivers are protected by forests. The forest, exerting an influence not over one limited portion of a watershed but over the greater portion of it, produces certain conditions which can never be entirely replaced by engineering methods. The dam, the reservoir, the settling bed, the levees and spillways influence only the reaches of the stream below them. The forest at headwaters influences the conditions of the entire river system. When the influence of these forests falls below a certain limit, engineering methods are futile; their efficiency rapidly fails and their very existence is threatened. The storage capacity of the reservoir and settling basin are destroyed by the sediment which is washed from the bare slopes; the bed of the canal is filled with it, harbors and rivers are constantly being choked by it in spite of the dredging. The accumulation of the detritus from the scourings of unprotected soils threatens the levees by the gradual raising of the river bed and requires their continual extension. As the floods at headwaters become higher with more erratic stream flow, the very dams which are built to restrain them are endangered.

The problem of controlling our water resources is unquestionably one of the most important problems of internal development of the country. Streams throughout almost the entire country are becoming more irregular every year. In nearly every part of the country the use of water resources is becoming more and more intensive and the value of property, affected either by floods or irregularities of flow, has become so great as to make the control of streams of an increasingly greater importance every year. The Geological Survey estimated the damage from floods alone throughout the United States at some $95,000,000 on the average each year.

One of the greatest needs today is that the different activities essential for permanent improvement of rivers be brought into correlation and be conducted in accordance with a comprehensive plan. Each drainage basin should be treated as a unit from source to mouth and all practical methods of regulating and equalizing river flow throughout the year should be adopted. Forest protection at the source of streams, proper agricultural methods in the valleys and foothills which would increase the absorption of water in the soil and prevent erosion, construction of storage reservoirs for flood regulation where these are required, levees and bank protection where this work is needed, outlets and spillways, and all other work bearing on the control of water should be harmonized into one great unifying system for each drainage basin.

Is it necessary for this country to go periodically through terrible calamities, such as the southern States are now experiencing, in order to learn the simple lesson *that water, like fire, must be controlled at the start?* To attempt to hold together at the bottom an accumulated mass running wild from a hundred unfettered sources at the top is to emulate King Canute when he sat in his chair and ordered in his own great name the incoming ocean tides to recede.

While it would be ridiculous for a forester to claim that reforestation alone will prevent floods and bring about improvement in our rivers, it is every bit as ridiculous for the engineer to claim that levees and dredging by themselves can work permanent improvement in our rivers. The engineer and the forester must work hand in hand if our river system is to be converted from a source of danger and expense to one of highest usefulness and revenue. This fact is so axiomatic that in Europe no system of river control would for a moment be contemplated that did not include protection of the watershed by forests or other vegetation. There can be no rational *water management* without *forest management.*

Help Save the Forests —Guard Against Fires!

Photo by U. S. Forest Service.

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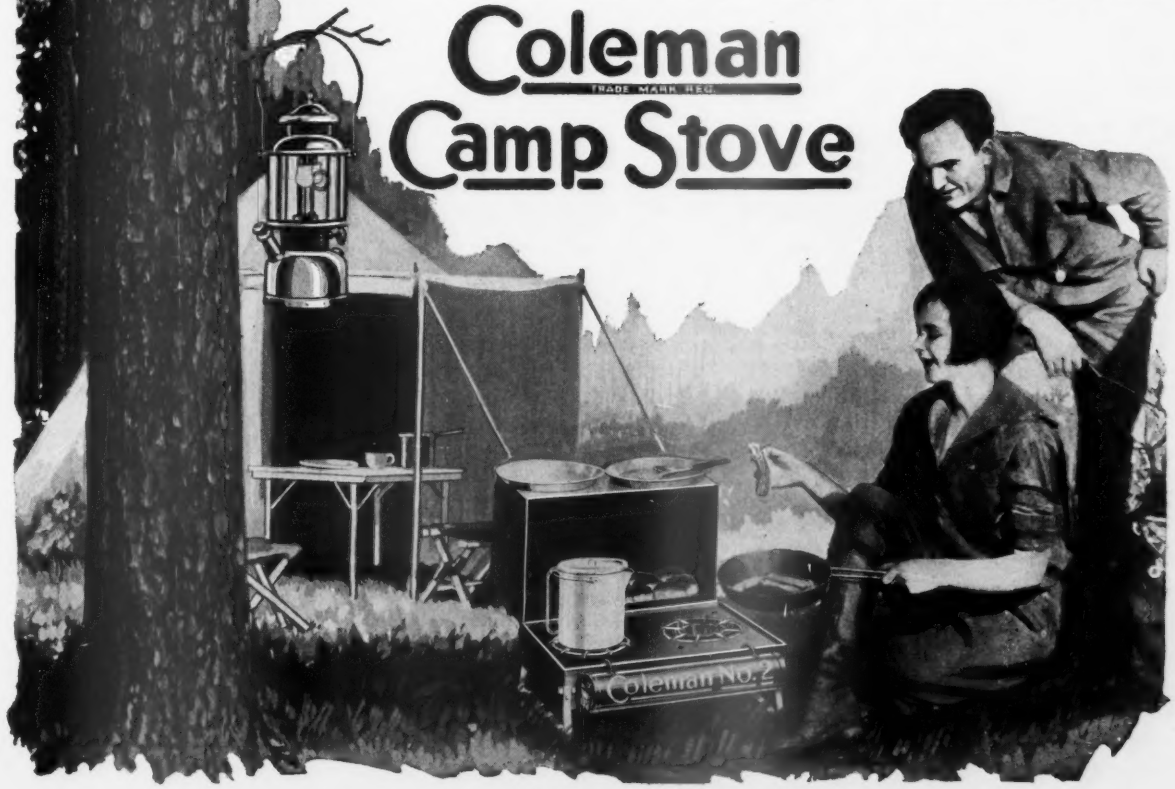

AROUND THE STATES WITH THE AMERICAN FORESTRY ASSOCIATION

Governor Signs Delaware Forestry Bill

Repealing the law which gave forestry powers to agricultural cooperation in forest protection with individuals and counties, the Delaware forestry bill, which passed both houses of the state legislature late in April, has been signed by Governor Robinson. The bill provides for a state forestry department and a non-salaried forestry commission of four members, including the governor, to be appointed for terms of two, four, six and eight years, respectively, the full terms of members appointed after the commission is established being set at eight years. The commission is to employ a technically trained state forester, to further state and federal cooperation under the Clarke-McNary law. The bill carries an appropriation of $5,000. Immediately after signing the measure, Governor Robinson named George W. Butz, Jr., and Williard Springer, Jr., of Wilmington, to the commission.

Must Fight Fires in Nevada

A bill recently passed by the Nevada legislature and signed by the governor, authorizes sheriffs and their deputies, fire wardens and National Forest officers to call upon able-bodied men between the ages of 16 and 50 years for assistance in extinguishing timber or brush fires. No one is to be required to fight fire for a total of more than five days during any one year. Refusal to obey the summons is made a misdemeanor punishable by a fine of from $15 to $50 or imprisonment of from 10 to 30 days.

The bill authorizes the board of county commissioners of any county to employ one or more fire wardens, who are to be compensated for time actually spent in fire fighting. The fire wardens will be under the direction of county sheriffs.

Fire Districts in Utah

Utah has taken a step toward developing an organization for fighting forest fires. In an act signed by Governor Dern, authority is given to boards of county commissioners to designate as fire districts all or any parts of watersheds within their respective counties, directing that notice be given by publication of the creation of such fire districts. Fires within the designated districts that burn growing trees, brush, grass, or undergrowth without adequate and proper precautions having been taken to prevent its spread is declared a public nuisance. Any person or persons responsible for the starting or existence of such fires are made liable to the county for the expense incurred in extinguishing them. The act defines as a misdemeanor the negligent or willful setting of fires.

FLORIDA FORESTRY BILL PASSES

On June 1, the Florida Senate concurred in certain minor amendments to the bill creating a Florida Board of Forestry as passed by the house. The Senate had voted favorably on May 30. Governor John W. Martin has signed the bill. The measure provides for a non-salaried board of five members and for the employment of a State Forester. A sum of $25,000 is appropriated for the next two-year period.

Senator M. O. Harrison, sponsor of the Senate bill, and Representative Tom Sale, who introduced it in the House, worked untiringly for its passage. Sustained effort over a number of years by the Florida Forestry Association is largely responsible for this victory. The American Forestry Association has also been interested in the bill and took an active part in popularizing it throughout the state during the legislative session.

New York Uses Fire Pumps

The use of fire pumps as a means of controlling brush fires has proven highly successful in New York, according to the State Conservation Commission. Recently, a severe brush fire was discovered in the vicinity of Crystal Lake, near Bethel, that challenged the efforts of a number of fire wardens. When the blaze had gained such immense proportions that it threatened a large tract of woodland, state rangers were appealed to and a number of fire pumps were brought into play with such effectiveness that the fire was extinguished in a few hours.

Cape Cod Experiment Successful

The Cape Cod experiment in fire protection through public education and patrol has had a distinctly successful first year, according to the *Forest Worker*. The number of forest and grass fires that occurred on the cape during 1926 was in fact 138 as compared with an average of 73 for the preceding three years; but this increase was due largely to land-clearing operations connected with a boom in Cape Cod real estate, which brought in great numbers of strangers unfamiliar with the unusual fire hazard on the cape. In area burned over the gains for fire protection are clearly shown; during the period 1923-1925, fires had covered an average of 9,363 acres a year, but in 1926 the area burned over was only 3,771 acres. During the earlier years the cost of fire suppression averaged $9,829, and in 1926 the combined cost of educational work, patrol, and suppression was only $12,452. Thus through an expenditure of one-fourth more the area burned over was reduced to two-fifths of the average.

The campaign on Cape Cod was undertaken by the Massachusetts Forestry Association with the cooperation of the Massachusetts Department of Conservation, the United States Forest Service, and the forest wardens of Cape Cod. As one result of the educational work 120 miles of old public and logging roads were brushed out, at the joint expense of the Massachusetts Forestry Association and the towns. Two men familiar with the district were placed on duty as forest rangers, each equipped with a small truck fitted for fire fighting; and throughout the fire season these men patrolled the roads of the cape, kept camp and picnic grounds and town dumps under inspection, supervised brush burning, distributed printed matter, reported fires and their causes, suppressed small fires, and kept the subject of fire prevention constantly before the public.

South Carolina Names Forestry Commission

A State Forestry Commission of five members has been named by the governor of South Carolina following the passage of a forestry bill for that state. Those named by the governor are: B. S. Meeks, Florence, S. C., industrial agent for the Atlantic Coast Line Railway Company; Paul Moore, Spartanburg, S. C., secretary, Spartanburg County Fair Association; H. L. Tilghman, Sellers, S. C., lumberman; W. H. Andrews, Andrews, S. C., lumberman; E. W. Siles, president of Clemson College, Clemson, S. C.; Henry H. Tyron, Aiken, S. C., extension forester of South Carolina, has been named secretary. In addition to the Commission, the measure provides for the employment of a State Forester. As the measure carries no appropriation, the state treasurer has been authorized to receive contributions from any source for the purpose of carrying out the provision of this act.

Florida Legislature Passes Fire Law

Both houses of the Florida legislature have passed a bill making it unlawful to set fire to any forest, woods, land, or marshes by other than the owner of such lands. The measure prescribes penalties for violations, upon conviction, of a fine not exceeding $1,000, or imprisonment not exceeding one year, or both fine and imprisonment. The act further makes the convicted liable for all damages caused by such fires. The bill is now before the governor for signature.

Scientific Fish Planting In California

The California Fish and Game Commission has announced that a new policy of the department contemplates a thorough survey of every stream in the state to determine the number and species of fish to be planted, elaboration of the holding pond system and the planting of fish fry only under direct supervision.

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Twenty-Fifth Anniversary of Nebraska Forest

Commemorating the first continuous planting project ever started on the National Forests, foresters throughout the country gathered at Halsey, Nebraska, June 4 and 5 to celebrate the twenty-fifth anniversary of the Nebraska National Forest and the Bessey Nursery. At the close of the first quarter-century of its history, the Nebraska Forest marks the transformation of more than 10,000 acres of former barren sand hill country into a successful timber stand, part of which will attain commercial size within a few years. It was here that the first continuous planting project was started in 1902.

The ceremony was featured by the reunion of a number of men prominent in forestry who were connected with the early development of this project. Charles A. Scott, of Fort Pierce, Florida, first supervisor of the Nebraska Forest, was master of the reunion ceremonies. Other speakers included Col. Allen S. Peck, district forester, Rocky Mountain District; Dr. G. E. Condra, Director of Conservation and Soil Survey of the University of Nebraska; Hon. R. W. Dunlap, Assistant Secretary of Agriculture, and Hon. Elmer J. Burkett, former United States Senator from Nebraska.

A preliminary reconnaissance of the country now included in the Nebraska Forest was made in 1901 to determine the advisability of starting a forest planting project, and in 1902 President Roosevelt created the Dismal River and Niobrara Forest Reserves. Later in the same year more than 50,000 seedlings were collected, including western white pine, yellow pine and blue spruce. These were planted in 1903. By 1912 the Bessey Nursery was in full operation and the following year more than 2,000,000 seedlings were distributed throughout Nebraska. In 1925 the capacity of the nursery was increased to 2,500,000 transplants annually, supplying young trees for both federal and state distribution.

Report Shows Extent of Maryland's Forests

The annual growth on the 2,228,000 acres of forest land in Maryland is approximately 68,000,000 cubic feet, according to the report of the State Department of Forestry for the fiscal year of 1926. The annual cut of lumber, firewood and other timber products, is approximately 72,000,000 cubic feet, or slightly more than the annual growth. The annual consumption of wood and timber products is 158,000,000 cubic feet, or about two and one-third times the annual growth. More than half of the timber and wood that is used in Maryland has to be imported.

The productive capacity of the state forest lands under intensive management and adequate forest protection, states the report, will exceed 154,000,000 cubic feet, an amount nearly equal to the present annual consumption. These studies, expressed in dollars, show that the annual growth has a value of $2,500,000, but with the forest lands working at full capacity and producing a higher quality of products, the annual growth would be worth $7,000,000. This shows an annual loss of $4,500,000, due to forest fire damage and lack of proper forest management, the report states.

State forests in Maryland comprise but 3,850 acres out of a total forest area of 2,228,000 acres, the report points out. Approximately 350,000 acres are idle, only capable of producing timber growth.

Cornell Gets Demonstration Forest

Approximately 1,700 acres of forest land near Ithaca, New York, have been presented to Cornell University by the heirs of the estate of the late Mathias H. Arnot, of Elmira, New York. The tract will be used for research and demonstration purposes under the management of the Department of Forestry of the New York State College of Agriculture.

The major part of the tract is in Schuyler County, in the watershed of the Susquehanna River, and is drained by Banfield and Cayuta Creeks. A new county highway passes the main entrance to the forest and other roads connect elsewhere with the state highways.

"The gift permits Cornell to render a higher service to forestry," declare foresters of the university, "inasmuch as it will permit types of forest research heretofore impracticable."

Forests of Coastal Plain Burn

Millions of young pine trees, the beginning of a forest crop that would be ready for harvest in from 20 to 40 years, were destroyed by fire in eastern North Carolina and Virginia during April, according to C. F. Korstian, of the Appalachian Forest Experiment Station, who has just returned from a six weeks' trip through the Coastal Plain region, where he has been conducting a field survey of forest lands.

The complete exhaustion of the old-growth pine forest, says Doctor Korstian, has forced the wood-using industries of the Coastal Plain to be entirely dependent upon timber grown upon a crop basis, much of which is produced in farm woodlands. To insure future timber supplies the young forests must be protected and cared for until mature and cut with the idea of bringing up a new crop from young growth. For this reason the destruction of the young timber by fire jeopardizes one of the region's most important industries. On the other hand, cut-over pine lands will become completely restocked to young growth in three to five years if adequate seed trees are left and fire is kept out.

Texas Governor Urges Reforestation

In his address before the opening session of the first annual convention of the East Texas Chamber of Commerce at Tyler, Texas, Governor Moody warned against the destruction of the pine forests and suggested that a program of timber conservation and reforestation be carried out in this region.

"Not so many years ago," said the Governor, "almost the whole of East Texas was covered with pines so tall that it seemed they must tickle the angels' feet. It appeared that the big pines were so numerous that their numbers would never be appreciably lessened. But today the supply of mature pine is almost gone and the second growth is being cut. If we do not work out some sort of solution and do it soon our pine forests will before long be a thing of the past."

Declare Flood Control A National Problem

The Mississippi Flood Control Conference, held in Chicago June 2, 3 and 4, called together from a thousand to fifteen hundred people, including senators, congressmen, governors of Mississippi Valley states, mayors of Mississippi River cities, and delegates from throughout the Mississippi Valley. The conference was held at the joint call of Mayor William Hale Thompson, of Chicago; Mayor Arthur O'Keefe, of New Orleans, and Mayor Victor J. Miller, of Saint Louis. Among those who addressed the conference were Dwight F. Davis, Secretary of War, Edgar Jadwin, Chief Engineer in charge of the Mississippi Flood Control work; Senators Watson, of Indiana; Hawes, of Missouri; Shipstead, of Minnesota; Harrison, of Mississippi; Congressmen Madden and Rainey, of Illinois; Nicholas Longworth, Speaker of the House; Gifford Pinchot, former Governor of Pennsylvania; and Colonel William B. Greeley, Chief of the United States Forest Service.

After three days of oratory and deliberation, the conference passed a single resolution dealing with the broad question of flood control. The resolution calls upon the Federal Government to begin at once a permanent plan of flood control for the Mississippi River, and declares that it is the sole responsibility of the Government to provide protection. The resolution also requests the President of the United States to call a flood control conference at which all measures of possible relief and control may be thoroughly discussed and considered. The resolution, in full, is given below:

WHEREAS the time is here for the Federal Government to attack the flood problem in a broad and comprehensive way because of the present Mississippi Valley disaster, the greatest of its kind in the Nation's peace time history, re-

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All issues previous to 1921.
April, September, October, November, and December, 1921.
October and November, 1922.
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It will be appreciated if readers having copies of these issues, for which they have no further use, will send them to the Association so that they will be available to libraries, schools, and individuals who wish to complete certain volumes.

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E. M. BUECHLY, Greenville, Ohio

sulting in an incalculable amount of damage to life and property, and

WHEREAS, the need for a comprehensive plan of National Flood Control is made apparent by this disaster and there are in general three proposals for flood relief set up by competent authorities, viz: levees, spillways or by-pass outlets and storage reservoirs, all of which should be considered,

WHEREAS it is contended that this problem cannot be adequately met by the application of any single remedy and that levees, spillways and reservoirs should be used in combination where practicable, together with such additional remedies as may from time to time be developed; and

WHEREAS floods in the Mississippi basin have not only brought disaster to those immediately concerned, but have resulted in economic loss to the whole nation, and the people of this country now demand that effective and permanent remedies be applied and they will willingly approve the expenditures of the public money necessary to this end,

THEREFORE BE IT RESOLVED, That the Flood Control Conference, assembled at Chicago, Illinois, does hereby declare that the control of the flood waters of the Mississippi River and all its tributaries is a national problem and that the sole responsibility therefor should be assumed by the National Government, and

RESOLVED further that we urge immediate and effective relief be extended to all present sufferers; that the measures which may be recommended by existing Federal Agencies for relief to the lower valley, so as to protect it against a recurrence of the present disaster, be carried out promptly and that the necessary appropriations therefor be made, and

RESOLVED FURTHER, That, without delaying the carrying into execution of such imperatively necessary measures as may be recommended by existing governmental agencies, the President of the United States is requested to call a Conference for the purpose of formulating, in conjunction with such governmental agencies, a comprehensive plan for navigation and permanent flood control; said conference to be composed of army engineers, civil engineers, conservationists, geologists, financiers, agriculturists and other experts representing the various interests of our country, and

RESOLVED FURTHER, That, the Conference petition the President of the United States and the Congress to energetically undertake and carry to a speedy conclusion comprehensive and effective measures for permanent flood control of the Mississippi River and all its tributaries.

Sales of Turpentine Cups Increase

The production of turpentine during the present season is expected to be considerably greater than in recent years, judging from the number of new turpentine cups sold during the past winter. Sales of cups, including all types, amounted to a total of 32,310,000, equivalent to 3,231 crops of 10,000 cups each.

NORMAL SCHOOL TREE PLANTERS

350 Students of the State Normal School at Montclair, New Jersey, each planted a two year old red pine tree on the hill back of where this picture of part of the group was made. The hillside is part of the property belonging to the Normal School. Following the school planting, 1500 more red pines were planted by the students on their home grounds in various parts of the State.

Wild Laughter

For thirty miles as a bird drifts
The valley spread
From rim to rim.
It was so still
I heard the flowing murmur
Of a million trees.
Old trees and stalwart sons,
They rose in stately scorn
Of ax, of lightning
And the storm.
Here was seclusion,
Retreat from dust and sun
And source of virgin water
For untold years to come.
The full, green strength of Nature
Deep-rooted from rim to rim.

Sometime—I pictured the vision—
Man's ruthless arm would come
Yet each brave tree would meet it
Mute to the ax and saw,
Never a groan at dying—
Only the thunderous crash—
And many a year would pass
Before they cut the last.

But now on the valley's rim
A grey-capped cloud arose
That darkened and curled and spread.
And suddenly I heard a rush
Of creatures fleeing blindly.
Then all was still again,
Only my fancy,
Like a startled breeze,
Stirred through the silent trees.

And then, astride the wind,
I heard him coming,
And his wild laughter.

Flaming hour on hour
The forest met
The red arms of the monster,
No mercy asked, no mercy shown,
And a pall hung over the valley.

Some thoughtless hand and a careless match,
A million trees—
And a fire's wild laughter!

—Lowe W. Wren.

Wing Beams of Lindbergh's Plane Made of Spruce

It was the wings grown on the shores of the Pacific that carried Colonel Charles Lindbergh to the aerial conquest of the Atlantic. The Ryan Airplanes Company, which built the "Spirit of St. Louis," has announced that the wing beams were made from Sitka spruce obtained from a mill at Hoquiam, Washington. This wood came into fame for airplane construction during the World War.

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California's Forest Wealth

California's forests have produced far greater wealth than the combined output of her world-famous mines, according to a descriptive bulletin, *The National Forests of California*, which has been published by the United States Forest Service. The annual value of the lumber products of the State is about $62,000,000. The eighteen National Forests of California cover nearly one-fifth of the total area of the State, says the bulletin, and contain resources valued at $300,000,000 not taking into account their value in protecting the mountain watersheds upon which depend nearly all the actual and potential major irrigation and hydroelectric power developments of the State, and the continuity of municipal and domestic water supplies.

The circular gives an interesting account of the early history of California's forests, the National Forest resources in the State, the value of forage in the forests, recreation possibilities and scenic attractions, wild life, the administration of the National Forests, the development of forest roads and trails, the causes and means of preventing forest fires, and production and consumption of lumber in the State.

City Planners Hold Conference

Urging application of the principle of comprehensive city planning, President Coolidge, in a letter read before the Nineteenth National Conference on City Planning, held at Washington, D. C., May 9, 10 and 11, declared that such a course was necessary to the development of the nation's business.

"I have been especially interested in the application of far-sighted city planning to the administration of the nation's business," said the President. "Your efforts to secure the application of this principle to the rapidly growing towns and cities are deserving of utmost success."

The conference made a big step forward in the city planning movement when it unanimously approved a comprehensive platform on the subject of planning new subdivisions. The platform consists of seven detailed recommendations and will be submitted to the country for adoption in every community. The program was worked out by a joint committee of city planners and the National Association of Real Estate Boards.

Hearing on Turpentine Standard Announced

A public hearing to discuss the proposed standard for "Sulphate Wood Turpentine," for which no standard is established by the Naval Stores Act, will be held at the office of the Food, Drug and Insecticide Administration, Washington, D. C., on August 15, 1927.

The text of the notice by the Secretary of Agriculture follows: "Pursuant to the authority vested in the Secretary of Agriculture by the Naval Stores Act of March 3, 1923, notice is hereby given to the trade of the intention to establish a United States standard for naval stores for which no standard has been established. This standard is for Sulphate Wood Turpentine. Under this standard 'Sulphate Wood Turpentine' means wood turpentine obtained in cooking resinous wood by the sulphate process, and subsequently so refined that it has a characteristic but not offensive odor, contains not more than 0.02 per cent of sulphur, and will not tarnish a bright strip of copper boiled in it for one-half hour.

"Oral statements or arguments may be made at this hearing or written statements or arguments may be submitted on or prior to the date of this hearing."

Montana Attacks Pine Beetles

The largest undertaking in pine beetle control ever launched in Montana began early in June in the lodgepole forests along the Bitterroot-Big Hole Divide, according to the United States Forest Service. More than $43,000 has been appropriated for this work.

Under the direction of J. C. Evenden, of the Bureau of Entomology, infested trees will be cut down and burned, or in light cases, a peeling method will be employed. It was stated that while this infestation is largely in lodgepole pine, other trees, including the valuable white and yellow pines, are subject to the attack of the beetle.

Virginia Survey Under Way

A survey of non-utilized wood in connection with the operation of woodworking plants and sawmills in Virginia was started late in May, according to Axel H. Oxholm, Director of the National Committee on Wood Utilization of the United States Department of Commerce. Governor Harry F. Byrd of Virginia, is Honorary Chairman of this sub-committee, and J. P. Hummel, paper manufacturer, of Hopewell, Virginia, is chairman. Other members of the committee include W. B. Simmons, vice-president of the Wilts Veneer Company, Richmond, Virginia, and W. F. Bancker, president of the American Forest Products Company, New York City.

Ohio Clubs Plant Trees

Inaugurating a five-year reforestation program, the Kiwanis, Rotary and Lion clubs of Medina County, Ohio, planted more than 12,000 forest trees at Camp Crag, the county recreational center, late in May. The work was done under the direction of L. J. Leffelman of the State Forestry Department.

Camp Crag is unique in that it serves as a recreational center for the Boy Scouts, Y. M. C. A., Girl Scouts, 4-H Clubs, and various women's organizations and civic bodies. All of the organizations utilizing the camp took part in the project which covers nearly 200 acres of cut-over land.

Col. Graves Resigns Yale Provost Post

The resignation of Col. Henry S. Graves as provost of Yale University, effective July 1, has been announced. Col. Graves is giving up his office, the university announced, to devote his full time to his duties as dean of the Yale School of Forestry and as Sterling professor of forestry.

New Members of Appalachian Forest Research Advisory Council

Verne Rhoades, consulting forester of Asheville, North Carolina, and Paul R. Camp, president of the Camp Manufacturing Company, Franklin, Virginia, have been appointed by the Secretary of Agriculture to the Appalachian Forest Research Advisory Council. They will succeed B. W. Kilgore, director of the North Carolina Agricultural Experiment Station at Raleigh, and C. C. Smott III, president of C. C. Smott Sons Company, tanners, Alexandria, Virginia, whose appointments have terminated.

The Appalachian Forest Research Advisory Council was created in 1924 to correlate the research activities of all forestry agencies in the Appalachian group of states and to advise the United States Department of Agriculture upon its forest research program, particularly as it applies to the work of the Appalachian Forest Experiment Station at Asheville, North Carolina.

Court Rules Against Killing Kaibab Deer

A decision recently handed down by the United States Circuit Court of Appeals forbids the Forest Service from licensing hunters to kill deer on the Kaibab National Forest and the Grand Canyon Game Preserve, in Arizona, which are in excess of the carrying capacity of the range.

The Court ruled that while the ownership by the government of all lands embraced within the boundaries of the Kaibab Forest could not be questioned, and that the Forest Service was justified in protecting all growth constituting part and parcel of the land by methods of its own selection, federal authority did not extend to the licensing of hunters to transport deer killed in the preserve to places outside the reservation in violation of the game laws of Arizona.

Connecticut Forestry Legislation

The Connecticut general assembly, recently adjourned, adopted a number of improvements in the forestry laws of the state, and increased appropriations were made for most items.

The most notable development was the increase from $30,000 to $70,000 the appropriation for forest fire protection for the next two years. This increase will permit the erection of lookout towers, the purchase of necessary fire fighting equipment and increase in the number of fire

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patrolmen. In addition to the appropriations, the fire laws were strengthened by giving the state forester authority to organize special fire fighting companies along the lines of fire companies in cities and towns. The law also placed upon the cities the duty of suppressing grass and brush fires within their boundaries.

Appropriation for the purchase of lands to be added to the state forests was set at $100,000 with an added appropriation of $25,000 for executive work. It is estimated that the sum available will enable the purchase of 15,000 acres of forest land. The appropriation for the operation of the State Forestry Department was increased from $42,500 to $75,000. Parks and recreation were given $370,000, an increase of $130,000 over that of two years ago.

Supreme Court Upholds Federal Forest Fire Law

The Supreme Court has recently decided that carelessness with fire need not be confined to Federal Forest lands in order to constitute a criminal offense under Section 53 of the United States Criminal Code. Leaving a fire near a Federal Forest without totally extinguishing it even though the fire is started on private land is a criminal offense in the eyes of the Court, and punishable by fine or imprisonment if National Forest timberland is endangered. The decision is especially important to National Forest protection, inasmuch as many thousands of miles of National Forest boundary are subject to the grave danger of fires that originate on adjacent private lands.

In the case of the United States vs. D. J. Alford, just decided by the Supreme Court, Alford had been indicted for setting a fire on land adjacent to the Florida National Forest and not extinguishing the fire before leaving it, as a result of which National Forest lands were burned over. The count was demurred to on the ground that the Federal statute did not cover leaving a fire at any place except on Government land. The District Court for the Southern District of Florida sustained the demurrer and the case was carried to the Supreme Court.

In handing down the opinion of the Supreme Court Justice Oliver Wendell Holmes said: "The purpose of the Act is to prevent forest fires which have been one of the great economic misfortunes of the country. The danger depends upon the nearness of the fire; not upon the ownership of the land where it is built. . . . The statute is constitutional. Congress may prohibit the doing of acts upon privately owned lands that imperil the publicly owned forests. . . . Taken in connection with the danger to be prevented it lays down a plain enough rule of conduct for anyone who seeks to obey the law."

Gipsy Moth Quarantine Revised For Vermont

Thirteen towns in Vermont and two in Connecticut were included in the barrier zone released from the gipsy moth and brown tail moth quarantine June 31, according to the Federal Horticultural Board, United States Department of Agriculture.

The Vermont area covers 475 square miles and includes the towns of Birkshire, Richford, Enosburg, Montgomery, Bakersfield, Belvidere, Fletcher, Waterville, Cambridge, Underhill, Bolton, Huntington and Buels Gore. The area in Connecticut released amounts to 93 square miles and comprises the towns of Goshen and Litchfield.

A revision of the quarantine regulation applying to the movement of nursery and field-grown florists' stock places restriction on certain wild stocks which were not included in the former regulation, and which may occasionally be shipped from properties or premises which would fall under the designation of "nursery."

New Bird Refuge in South Carolina

President Coolidge, by a recent executive order, has set aside a tract of about 2,350 acres in Jasper County, South Carolina, as a preserve and breeding ground for native birds. The area embraces certain abandoned rice lands belonging to the United States abutting on the Savannah River, near Savannah, Georgia, and is to be known as the Savannah River Bird Refuge.

The new reservation has been placed under the administration of the Biological Survey of the United States Department of Agriculture. It will be unlawful for any person to hunt, trap, capture, disturb, or kill any bird or wild animal of any kind whatever, or take or destroy the eggs of any such bird, or to injure, molest, or destroy any property of the United States within the limits of the reserve, except under such rules and regulations as may be prescribed by the Secretary of Agriculture.

Federal Forest Protection Board Organized

The heads of the bureaus responsible for the administration of Federal forest lands have been organized into the Federal Forest Protection Board, by an order of the Chief Coordinator, under the Bureau of the Budget. The Board is headed by Col. W. B. Greeley, Chief of the Forest Service, and includes the chief of the Weather Bureau, the director of the National Park Service, the Commissioner of Indian Affairs, and the Commissioner of the General Land Office. At a series of meetings the board has considered "general policies and plans for the protection of the forests of the country, especially in the prevention and suppression of forest fires."

Seventh State Parks Conference

The National Conference on State Parks held its Seventh National Conference at Bear Mountain, in Palisades Interstate Park, New York, on May 17, 18, 19 and 20. The meeting proved to be the most successful and profitable in the history of the conference, and was attended by several hundred people. The program included papers and talks from men and women leaders in different fields of state park and forest activities. On Wednesday, the 18th, the conference was addressed by Governor Alfred E. Smith, of New York, who told of the work upon which New York is launched in developing State Parks. Governor Smith emphasized the point that the people are ready to vote money for State Parks, provided they are assured that the money will be well spent.

Thursday, May 19, the Conference made an all-day motor trip inspecting the parks and parkways of the Westchester County Park System.

The Conference went on record in urging upon the authorities of all the states the need of a survey of major land uses and the development of a general plan showing the desirable areas to be devoted to parks, recreation, timber production, agriculture, water power, etc. A resolution was also passed favoring a gasoline tax, one-half of which should be applied to the construction and maintenance of roads, and the remainder to the creation of adequate park and forest areas.

The Conference, by vote, urged the importance of public education in natural history as a vital factor in conservation and as one means of eliminating the damage done to state and other parks by the visiting public which is so largely ignorant of proper outdoor manners. The Conference decided to hold its next annual meeting at San Francisco, California.

Long-Bell Plants Trees in Louisiana

The Long-Bell Lumber Company has extended its forestry activities to its southern holdings. A nursery with a present capacity of one million seedlings has been established at De Ridder, Louisiana, for reforesting the company's lands in that state. It is estimated that 1,200 acres will be planted yearly. A. D. Read has been transferred from Longview, Washington, and is in local charge of the company's forestry work in Arkansas and Louisiana.

It was also announced that second growth holdings ready for thinning will be put under intensive management, the thinnings, as post and poles, going to the Company's creosoting plants at De Ridder and Shreveport. This second growth is being protected from fire by a cooperative agreement with the Louisiana State Conservation Department.

Names Director of New Forest Experiment Station

Appointment of E. F. McCarthy, assistant director of the Appalachian Forest Experiment Station at Asheville, North Carolina, as director of the new Ohio-Mississippi Valley Forest Experiment Station has been announced by the Secretary of Agriculture. The new station, provided for by Congress at the last session, will undertake the study of methods of growing and protecting timber crops in Ohio, Indiana, Illinois, Iowa, Missouri, and western Kentucky and Tennessee.

Mr. McCarthy will at once take active charge of the establishment of the new station which is expected to be put on an actual working basis within the next few months. Accompanied by E. H. Clapp, chief of the research in the United States Forest Service, the new director is now making a survey of the Ohio-Mississippi Valley region to determine the most desirable location for the headquarters of the experiment station.

Plant Forest to Luther Burbank

Dedicated to the memory of Luther Burbank, a little forest of pine trees was planted on the summit of Mt. Frazer, California, late in May, by a small group of California admirers of the famous naturalist. A bronze tablet was erected on the summit of the mountain, naming the forest the Sanctuary of the Pines.

"Let's Grow Some Locks"

In its June 11 issue *The Liberty Magazine* printed under the above title, the following editorial, which is very much to the point:

"The recent floods in the Mississippi Valley left an army of destitute and ruined people. Red Cross quotas were raised (did you send in what you could spare?) as the levees fell. But a new national problem has arisen.

"What caused the disaster? What can stop such catastrophes from occurring every once in a while? From growing worse? Where is a lock for the stable, now that so many horses are gone?

"Herbert Hoover, in charge of the search for a lock, says the levee system is the only possible cure for Mississippi floods. He believes the planting of new forests along the river's route would take too much time and produce only half-way results.

"Maybe. What has been stripped off the land in 150 years can't be replaced in one year or ten years. Now that the one-time sponge of forest and marshland edging the Mississippi has been crippled by man's nature-improving activities, further artificial devices are the only immediate cure. High concrete walls, for example.

"That is no reason for giving up any plans for reforestation. Do what is possible in the emergency, but do some planning for the future too."

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FINAL DATE FOR BIDS.—Sealed bids will be received by the District Forester, Albuquerque, New Mexico, up to and including September 1, 1927.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Albuquerque, New Mexico, or the Forest Supervisor, Williams, Arizona.

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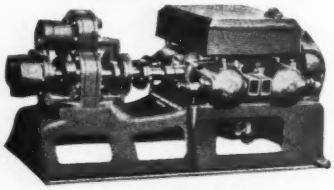

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National Forests Receipts Show Gain

Receipts from the operation of the National Forests of the United States during the first three quarters of the current fiscal year showed a gain of more than ninety thousand dollars over those of the corresponding period of the last year, the United States Forest Service has announced.

The eight districts, which include all the National Forests of the United States and its territories, took in a total of $3,369,568.59 during the period from July 1, 1926, to March 31, 1927, as compared with $3,278,558.03 in the first nine months of the preceding fiscal year. This showed a net increase of $91,010.56. Sale of timber on the National Forests, to be cut by private lumbering concerns or local settlers under Forest Service supervision, accounted for the major portion of the receipts, bringing in a total of $2,303,324.93 over the nine months' period. The next most important source of revenue was grazing, fees for grazing, permits for cattle and horses amounting to $385,333.74, and those for sheep and goats, $281,349.17.

Under the law, 25 per cent of the receipts of the National Forests is returned each year to the counties in which they are located, in lieu of taxes, for road building and school development.

New York Names New Fire Towns

Amendments made to the Conservation law by Chapter 455 of the Laws of 1926, has been approved by the governor, and adds the towns of Crown Point and Ticonderoga, Essex County, New York, to the list of fire towns in the Adirondacks. This means that these towns will be included in the fire protection area over which the State Conservation Department exercises authority with regard to the protection of the forests from fire, and that it will be necessary for residents to obtain permits from a forest ranger before setting fires to burn brush or clear land.

Fire Experiment Station in Maine

A new station of forest fire experiments is to be opened this year near either Ashland or Millinocket, in northeastern Maine, by the Maine forest service and the Northeastern Forest Experiment Station of the United States Forest Service. It will have a staff of two men, and will be equipped with instruments for the determination of precipitation, air pressure, air temperature, air humidity, wind movement, evaporation, duff and soil temperature, and duff moisture. The effect of weather conditions on the inflammability of various forest fuels will be studied with the object of determining what danger of fire is brought about in different forest types, and in different conditions in these types, by any given combination of meteorological factors. Other studies will be made in an effort to determine the relative dangerousness, in different forest types and conditions and in different kinds of weather, of various firebrands from cigarrette stubs to camp fires.

Montana and Idaho Increase Fire Guards

More than one hundred additional rangers and fire guards for the protection of the National Forests of Montana and northern Idaho during the coming fire season have been authorized by Col. W. B. Greeley, Chief of the United States Forest Service. This move to strengthen fire-control forces is largely due to the disastrous season of 1926, when severe lightning storms, coupled with unusual drouth and winds, created a situation with which forest officials were unable to cope, primarily because of insufficient guards.

Australia Establishes a Forestry School

A forestry school for the Commonwealth of Australia was first suggested at the Interstate Forestry Conference in 1911, says the United States Forest Service. Although the proposal was greatly favored, nothing came of it until 1925, when C. E. Lane-Poole was appointed forestry advisor to the Commonwealth Government and a central school was temporarily established at Adelaide University under the professorship of N. W. Jolly. Adequate funds have now been provided and a central forest school is assured. Buildings are now being erected at Canberra and will be ready for occupancy some time during the year. The location of Canberra is fortunate, since the school will have immediately at hand probably one of the best conifer arboretums in Australia and will be within three miles of forest plantations now amounting to 1,000 acres.

Forestry In New Hampshire Girls' and Boys' Camps

The first systematic attempt to introduce forestry to boys' and girls' camps has been made by the Society for the Protection of New Hampshire Forests. William Harlow, of the faculty of the New York State College of Forestry at Syracuse University, has been employed by the Society to devote the entire summer to the introduction of forestry and forestry methods wherever private or public camps in New Hampshire can find room on their schedules for this work.

According to the present program, Mr. Harlow will visit camps for two or three days with the view to interesting the directors and counsellors in forestry and in demonstrating what forestry may mean to the boys and girls in camp. He will present a plan of action adapted to children of various ages and show how it can be adjusted to the conditions of the particular camp visited. This experiment will be carried on during the summer with the idea of ascertaining whether the reception accorded the effort will warrant a continuance of the work.

Mississippi Schools Acquire Demonstration Plots

Ten agricultural high schools in Simpson County, Miss., have introduced forestry as a major study, setting aside plots of from 10 to 40 acres apiece for forestry demonstration purposes. County plans for 1927 include the laying out of these plots and the inauguration of the study of forestry by the schools and the 4-H Club boys, under the supervision of H. C. Mitchell, extension forester. As soon as the forestry work in Simpson County has advanced to the point at which it can be turned over to the local authorities another district will be selected for like intensive work, and so throughout the state.

Alaska Pulp Timber Sales

The bid of George T. Cameron, president and publisher of the San Francisco *Chronicle*, for the purchase of 834,000,000 cubic feet of pulp timber in the northern portion of the Tongass National Forest, Alaska, has been received by the United States Forest Service, practically assuring the development of a large newsprint manufacturing industry in the northern territory. Previous to Mr. Cameron's bid, the sale of 8,350,000 cords of pulpwood on the Tongass forest was awarded to I. and J. D. Zellerbach, of San Francisco.

Mr. Cameron bid the minimum prices which it was stated in the advertisement would be considered. These prices are: 60 cents per hundred feet for spruce pulpwood, 30 cents per hundred cubic feet for hemlock pulpwood, $1.50 per thousand feet, board measure, for spruce and cedar sawlogs and $1 per thousand feet for hemlock sawlogs. The Zellerbach's bid was 80 cents per one hundred cubic feet for spruce pulpwood and 40 cents per one hundred cubic feet for hemlock pulpwood. Both Mr. Cameron and the Zellerbachs have filed application with the Federal Power Commission for permit to develop water power on several selected projects in the Tongass Forest. The award of timber is conditional upon the receipt of such permits and terminates automatically if the permits are canceled.

Revised Hunting And Trapping Regulations For Alaska

Revised regulations relating to game animals, land fur-bearing animals, and birds, in Alaska, recently adopted by the Secretary of Agriculture after recommendation by the Alaska Game Commission and approved by the Biological Survey, will become effective in the Territory on July 1, it has been announced. Although all the changes are important in certain areas, only a small number are of general interest.

The caribou season in the district north of the summit of the Alaska Range and Ahklum Mountains now opens August 1 instead of September 1, ending on December 31 as before. The period of September 1 to June 20 is fixed as the open season on black bear in the same district, lengthening the season approximately seven weeks. The opening and closing dates of seasons on certain fur bearers in designated areas were changed to meet local conditions.

By recent changes in the migratory-bird treaty-act regulations, a continuous close season for two years is placed on greater and lesser yellowlegs, and has the effect of abrogating the provisions of the Alaska game regulations with respect to seasons and bag limits on these birds.

Pennsylvania Awards Medal to Boy Scout Troop

Boy Scout Troop 79, of Scranton, Pennsylvania, has been awarded a distinguished service medal by the Pennsylvania Department of Forests and Waters for meritorious service in the cause of forest protection. The Scouts, divided into small details, patrolled definite forest areas every Saturday and Sunday during the fire season of 1926, warning campers and transients to be careful with fire in the woods. The troop also posted 325 forest fire prevention signs and reported and removed forest fire hazards.

Hardwood for Newsprint Developed in New Process

A new pulping process which produces a high yield of cheap print paper from hardwoods and offers the possibility of shifting the burden of newsprint production from spruce, which is being imported in large quantities, to the hardwood forests of the North, East and South, has been developed at the Forest Products Laboratory at Madison, Wisconsin, according to the United States Forest Service. Through the use of a rod mill, a hollow, horizontal, steel cylinder half filled with steel or bronze rods, hardwood chips are reduced to fiber by rotating the cylinder.

The substitution of the rod mill processing for a certain amount of chemical treatment brings about a high yield by reducing the amount of fiber which would go into solution in the treating liquors in an all-chemical disintegration. The distinctive feature of the new, or semi-chemical process, is that only a mild chemical treatment is used before the wood in the form of chips, is reduced to the proper pulp consistency in a rod mill.

Paper of the weight and thickness of newsprint made wholly from semi-chemical pulp of black, tupeloa, or red gum, or aspen, birch, or maple, was found to have greater strength than the present commercial newsprint. In the cast of gums, the department indicates that provided black and red heartwood have been excluded, the color of the paper can be made to excel that of standard newsprint.

Effective October 1, 1927

The prices of Hough's American Woods and Handbook of Trees will be increased as follows:

	Present Price	New Price
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(Cloth) per vol.	$7.50	$10.00
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The Part of Forestry in Flood Control

(*Continued from page* 410)

We have a law under which the national government cooperates with any state in promoting tree planting on farms, by furnishing the planting stock. This is precisely what is needed—for flood control—on a large acreage of abandoned or worn out hill farm land in the Mississippi basin. The law is sound; but we need a great deal more timber planting under its terms.

We have laws under which National Forests may be created anywhere on the drainage of a navigable river. These laws are adequate. The Government has established and is extending National Forests on several watersheds within the Mississippi basin. But we need many more of them. And we need many more state forests to supplement those in national ownership. They will pay good dividends in timber growth and forest industries, aside from their benefits to flood control. But public forest ownership is particularly urgent and warranted on critical areas of denuded or eroding land which are direct sources of destructive floods.

I wish to propose specifically that in connection with the study of flood control measures on the Mississippi from other angles a survey be made of the forested, denuded, and abandoned farm lands in the basin. This survey should set forth the areas:

First, where more complete protection from forest fires is needed.

Second, where extensive tree planting should be brought about; and

Third, where public forest ownership, either state or federal, is a necessary phase of flood control.

The purpose of such a survey should be to submit specific recommendations for the guidance of the federal agencies in their administration of the present forestry laws, or for additional legislation if needed; and also to outline the cooperative share in attaining the ends sought which should be assumed by the several states.

On the western tributaries of the Mississippi, there is an enormous acreage of grazing land in the open public domain. Grazing on these areas is wholly uncontrolled and usually excessive. An experiment in Utah made by the Forest Service showed that the run-off from rainstorms on overgrazed land was seven times as great as on adjacent areas that were moderately and conservatively grazed. Reduction of erosion is one of the clearly recognized aims of grazing control in the National Forests. The Secretary of the Interior has strongly recommended that grazing on the open public domain be also placed under regulation. It should directly benefit the conservation of forage and the stability of the livestock industry. But it cannot be left out of our present consideration of ways and means for reducing floods.

Nor should we overlook the natural storage afforded by swamps and overflow bottoms on the upper tributaries of the Mississippi. The drainage of swamps and overflowed lands, destroying natural water storage for the sake of precarious and often unsuccessful farming, has gone too far. Some of these areas should be restored to their natural storage function and their additional service as breeding grounds for fish, water fowl and fur-bearing animals. Let us have fewer attempts at ill-

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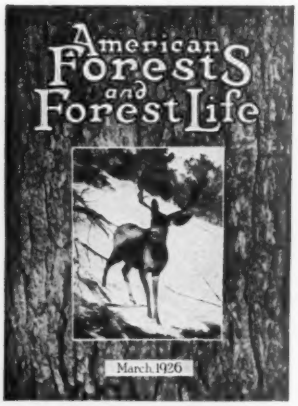

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July, 1927

advised agriculture and more swampland fish and bird reserves like the Winnesheik bottoms along the Mississippi.

All of these elements in the problem, forestry included, bring us down to the bed rock of rational and productive use of land. It offers many public benefits aside from flood control. It offers a future supply of timber, the conservation of forage, the saving of soil fertility, the profitable use of idle land, the preservation of valuable wild life, and a more diversified and stable agriculture. Flood control may, if you please, be regarded as a by-product of other national benefits from the effective use of land.

Planting Old Glory on the Dome of Montana

(*Continued from page* 415)

they have a worthy antagonist, and spurred on by the fact that their goal lay so close at hand, the party finally emerged through the last steep rocky chimney to a ledge which led without serious interruption to the top of Granite Peak and the very roof of Montana. Triumphant shouts, which made the vast solitude resound, were then sent forth as a signal to the other division of the party, who it was hoped were not far below, but no response could be secured.

The top was reached at 11:10 a. m. Not one small rock lay on top of another, nor did any portion of the top of the peak give evidence of ever having been disturbed by animal life since being lifted to its present position by the great Archaean uplift of the dim prehistoric ages. It was plainly evident that no mammal larger than a cony ever trod this rocky windswept ridge of barren granitic rocks which was scarcely twenty feet wide at its greatest extremity and not over 100 yards in length to the point where it broke off abruptly toward the sawtooth notches between the two main peaks of Granite. There was not a sign of any vegetation save a few lichens clinging to the bare rocks, nor were there any soil accumulations whatsoever to offer an opportunity for plant life. The last vegetation, a species of sorrel, found growing in a small crevice in the rocks, occurred some 150 feet below.

The party remained on top for two hours, building a huge rock monument supporting an eight-foot alpine hardwood staff upon which the stars and stripes were securely fastened. We carved our names and the date (August 29, 1923) deeply in the solid granite. A complete panorama of pictures was taken from the top. Fifty or more lakes could be sighted, including the hazy outline of the far distant Yellowstone Lake in Yellowstone National Park. All of the principal peaks in the Beartooth Range could be plainly seen, as well as Hartz Mountain, Pilot and Index Mountains in Wyoming and Electric Peak and Mt. Washburn in Yellowstone Park, besides scores of other unknown peaks. As a thunderstorm was gathering off toward Yellowstone Park, and nothing having been heard from the other division of the party, it was decided to start the descent so as to get below the cliffs before rain or snow made the rocks any more dangerous to travel.

The party left the peak at 1:10 p. m. The descent was even more difficult and dangerous than the ascent and on the upper portion of the route the travel downward took a great deal more time. The ropes had to be used more frequently than during the ascent. Luckily we had monumented the trail with rock on the way up and this saved much time as many of the bad places looked entirely different on the return trip. If we had not known that we had traversed them successfully on the ascent we certainly would have hesitated before attempting them. The route was remonumented much better on the way down for the benefit of anyone who in the future might desire to attempt

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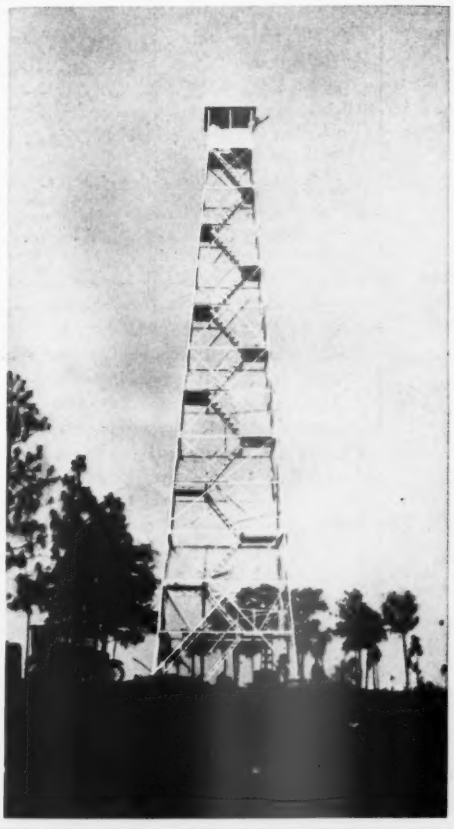

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The house at the top of the tower is 7-ft. square. It provides comfortable quarters for the observer.

The illustration shows an 80-ft. tower of the LS-40 type. It was erected at Kirbyville, Texas, for the State Forestry Department. This tower has a regular stairway, with a railing on both sides, from the ground to the cabin. It is safe and easy for anyone to climb. The prices are moderate.

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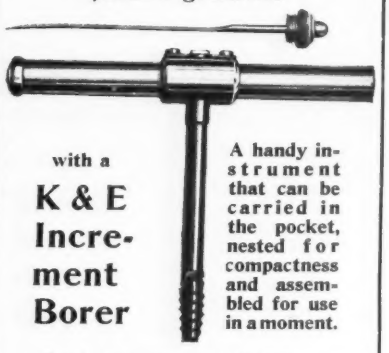

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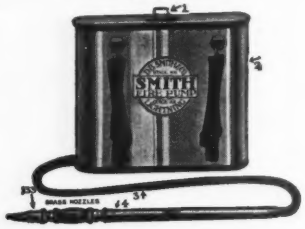

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The Knapsack tank, holding about 5 gallons, is conveniently carried on the back, similar to a pack basket. It has a detachable strainer, preventing any sediments or rubbish entering when dipped into stream or lake for filling. The pump is entirely of heavy brass and has no leather packings or parts to play out or wear out, and is always in working order ready for any fire emergency. One brass cylinder works back and forth inside the other, and slow easy pumping throws a powerful 50-foot stream to any point desired.

The Indian is easily carried over logs and hilly places, and quickly extinguishes fires in trees, crotches, stumps, etc., and is highly recommended. Used on private estates, private and public parks, private and public lumber preserves, state and federal preserves. No forest either small or large should be without this fire pump.

Write for descriptive circular and prices on the Indian and other styles.

Manufactured by
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the climb. After descending about 250 feet from the top, the other division of the party was sighted crossing a snow field 2,000 feet below, so it was then definitely known that it had abandoned the climb. Avalanche Lake was reached at 5:30 p. m., where the other section of the party had previously arrived and had welcome hot coffee on the camp fire.

This peak was successfully climbed for the second time on August 24, 1926, by Norman Clyde of Independence, California, a member of the Sierra Club, a mountain climbing organization of California, and by Ernest Vogel of Billings, Montana. Mr. Vogel is a young man of Swiss nativity who has been in America about five years. He has had some experience in mountain climbing, both in Switzerland and this country, but says that without the more seasoned help of the California climber he could not have attained the summit.

Camping As She Is Did

(*Continued from page* 403)

is the naked truth." The camper must feel the magnificence of the timberlands, must stand unattended in the forest solitudes, before he can fully accept the principles of forest administration.

Last year millions of people invaded the wilderness in comparison with a scanty few thousand of twenty years ago. In recent years the vagrant spirit has become so conspicuous in American life that the impulse of a new freedom has found lodgment in the heart of mankind.

Serious minded people blame this growing spirit of refined vagabondism to the restlessness that has moved with lightning speed throughout the world since the last gun of the World War. The confines of the city, the county, the state no longer stand out as the walls of a man's abode. More radical people declare it the result of broadside publicity, a landslide of propaganda launched by the institutions of industry and easy money. Others are quite willing to lay it to the present day fad of pleasure before everything else. Still others will argue too much prosperity; and without looking far you will find any number ready to blame prohibition or Congress.

Battered unmercifully through ages of restlessness, the camper is quite willing to be propped up and knocked down again without the cost of ill-nature or delirium tremens so long as he is entrenched alluringly as the nomad of the forests. Much to the rage of the serious thinker he is entirely suave in thought and person, and from the cradle to the mausoleum has chosen very happily to hang onto his divine rights of camping when and where he pleases. He is a crusader against the moods of melancholy and all the wise sayings of our unrelenting, dark-visioned people will never turn him from his unscrupulous wandering nor infest him with remorse when the open road is straight ahead and the call of the wild beckons.

It is a colossal undertaking to regulate the camper. He dominates the situation by the sheer force of his personality. He set out to make his presence felt and has succeeded. Resting in the seat of the mighty, fascinated by his adventure, he is sowing the seed of a fatal infection, trifling with great natural realities. He is beaming under the influence of soft and easy days, a state of lazy indifference, an atmosphere of tranquility, a new-found joy. His is a gallant dream, a mirage of iridescent tints. You may make him face the facts, make him see that conditions are doubly solemn by the relentless march of his legion; that camping neglect can not be shrugged away. But facts are funny things and the camper's tears refuse to flow. To him the world is saying nothing with much seriousness.

There are any number of reasons for this, most of which come out of Detroit F. O. B., but the fact remains that these pilgrimages into the shadow-flecked expanses of the unknown find their source in the human trait of vacationing. These periods have long been times to forget the road ahead and the path already trod; and when camping ceases to be a vacation the camper will be the central figure in one of the most tragic fade-outs ever flashed on the screen of life.

THE CURSE OF THE CAN BRIGADE

Up the hill, down the hill,
Under the spreading oaks,
All through the valleys green
Where ride the motor folks,—
There lie the can brigades
Some new, some brown with age,
Shameful Tin Hundreds.

Cans to the right of us,
Cans to the left of us,
Cans all around us,
Warped, crushed and sundered.
Fruits, fish and salted meats,
Sardines and pickled beets,
In fact, all kinds of eats,
And beans by the hundred.

In groves of sylvan shade,
A curse on the Can Brigade
Where'er we find them;
Speed fast the glorious eve,
When tourists all must leave
Clean camps behind them.

—Isabelle M. Horn.

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FRANKLIN MOON, Dean

Stage this Session–
Stop Excess Freight Payments

HIDDEN in your freight bills there may be an item of waste totaling thousands of dollars each year. *Are you sure* you are not paying unnecessary freight on excessively heavy crating lumber?

One sure way to find out is to bring together these four men: Your purchasing agent, traffic manager, packing foreman and the Weyerhaeuser man.

These men, with their collective knowledge of lumber, lumber prices, freight rates and freight shipments can in a short time tell you if your *final lumber costs* are as low as they might be.

Much crating lumber that today passes as cheap lumber is only *cheap to buy*—not cheap to use. Excessively heavy woods are hard to work and cause waste by splitting when nailed. They add an unnecessary tax to your freight bills.

Write for complete details of a crating lumber session.

Weyerhaeuser Crating Woods

A continuous dependable supply of 8 light-weight woods—one to fit each packing need. Abundant strength—easy working—nail without splitting.

Cut-to-size Crating for Standardized Crates

If you can standardize your crates, you will save additional money with Weyerhaeuser *cut-to-size* crating lumber—bundled, ready to nail up. No freight on waste. No costs for cutting. Less storage space. Rapid packing.

Weyerhaeuser Light-weight Crating Woods

Choice of 8 kinds - Light but strong - Work easily - Nail without splitting

WEYERHAEUSER FOREST PRODUCTS
SAINT PAUL · MINNESOTA

Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose. Also producers of Idaho Red Cedar poles for telephone and electric transmission lines.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 806 Plymouth Bldg., Minneapolis; 208 So. La Salle St., Chicago; 2563 Franklin Ave., St. Paul; 1600 Arch St., Philadelphia; 285 Madison Ave., New York; 812 Lexington Bldg., Baltimore; Portsmouth, Rhode Island; 2401 First National Bank Bldg., Pittsburgh; 1313 Second National Bank Bldg., Toledo.